

Serving the CoCo Community for

The

RAINBOW

11 YEARS

THE COLOR COMPUTER MONTHLY MAGAZINE

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See Page 14

Feature Program

CoCo 3 Directory Assistance

Have you ever found yourself wading through a stack of full (of course) disks looking for a specific file? (More than once?) It's kind of like trying to find the proverbial needle, isn't it? *Directory Master* is a CoCo 3 program designed to help you out of such haystacks with a minimum of effort. *Directory Master*, which requires a monochrome or RGB monitor, displays up to 68 filenames (the per-disk maximum supported by Disk BASIC) on-screen at one time. And it does a lot more.

To get *Directory Master* running on your CoCo 3, enter both listings presented here and save them to disk. The program shown in Listing 1 is the main program. Before you run it, however, you must run the program shown in Listing 2 to create the screen font *Directory Master* uses for the Hi-Res screen. When you run the program in Listing 2, the new screen font is automatically saved to the disk in Drive 0 — make sure you have at least one free granule on the disk. The font is saved with the name STRDM003.BIN.

To start *Directory Master*, simply enter RUN "DMASTER". After the program has loaded, it loads STRDM003.BIN from the disk in Drive 0, then displays the directory for that disk.

The *Directory Master* directory listing is split into four columns. At the top of the screen you'll see the current name for the disk, the currently selected drive, the total number of files on the disk, and the number of free granules remaining. At the bottom of the screen are the 10 command options available to you while running the program. To invoke an option, simply press the single letter associated with it.

Before I describe these options, let me explain how to select files. When you choose an option that requires you to select a file, the program highlights the first filename in the directory listing. Use the space bar to move this highlight bar down the listing and press ENTER to select the highlighted file. When the bar reaches the end of the listing, it reappears at the top. *Directory Master's* options are as follows:

R (Execute) — loads from disk and executes the selected BASIC or machine-language program.

L (Load) — loads the selected BASIC program from disk without running it.

N (Filename) — renames the selected file. The new filename and extension are handled separately — enter up to eight characters for the filename.

See *Directory* on Page 20

Feature Program

OS-9 Repeats Itself

A root reason for using computers is to make the tasks we must perform much easier to accomplish, and this assistance occurs on many levels. For instance, most users of the OS-9 operating system know about the special repeat "key," CTRL-A. You can type a command line, and if you

press CTRL-A right after pressing ENTER, you can recall it ad infinitum. This is great for correcting typing errors and makes entering repetitive commands easier. Still, it can be quite cumbersome for many computer chores. This is why I wrote *Rep*.



Rep permits repeated execution of OS-9 commands, taking the commands' parameters from the standard input path (via the keyboard), a pipeline or redirection from a text file. To use *Rep*, simply type *rep* followed by the name of the command you want repeated. In place of the parameter for the command, substitute a dollar sign (\$). Let's look at an example.

Suppose you want the header information for a number of binary files that are located in your execution directory. You could enter *ident -x filename* to get the information about the first file. (-x is OS-9's built-in option for specifying the current execution directory.) Then you might use CTRL-A, backspace over the first filename, type the second one, and press ENTER. Do this for a dozen files and it gets a little old. *Rep* allows you to enter

Upon receiving this command line, OS-9 executes *rep*, which links to the *ident* command if it's present in memory. (If *ident* is not in memory, the system loads it from the execution directory.) *rep* then waits for you to type a filename and press ENTER. When you do this, *rep* executes *ident*, replacing the \$ with the filename you entered. After *ident* displays the module's data, *rep* waits for another entry. Simply continue entering filenames until you have all the information you need. When you are finished, press ENTER — *rep* unlinks *ident* and terminates.

Rep's operation with an OS-9 command can be made more automatic by passing parameters for the command from a pipeline or by redirection from a text file. For example, I use a directory utility called *d* that lists the files in a directory one filename per line rather than spreading them across the screen. If I want to copy all the files in the current data directory to my ARCHIVE directory, I use *Rep* as follows:

```
d | rep copy $ /d1/archive/$
```

d supplies *rep* with all the filenames in the directory, one at a time. *rep* executes *copy* for each filename, replacing each \$ with the filename, and copying all the files to the /D1/ARCHIVE directory. *rep* automatically terminates after the last file in the directory.

The earliest version of *Rep*, which ap-

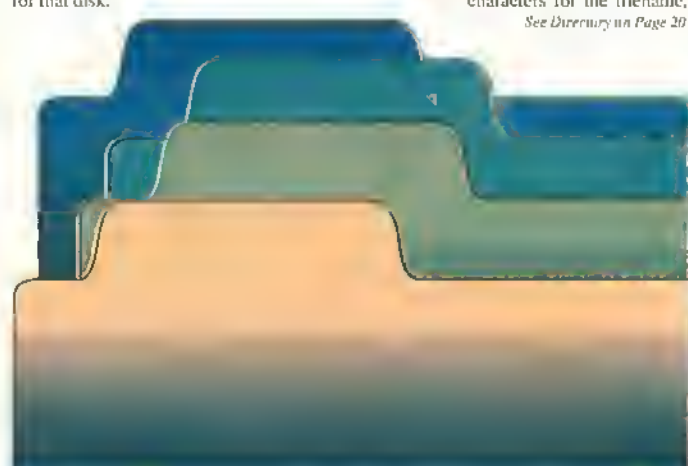
See *Repeats* on Page 12

```
rep ident -x $
```

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Print#-2

Happy Birthday,
RAINBOW!

Well, we've come a long way together, my friends. This issue of THE RAINBOW marks the beginning of our twelfth year of service to the CoCo Community. And, we expect to be around for quite a bit longer.

As I told you in this space recently, we have — overall — received an extremely positive reaction to our new format. Yes, we have had some complaints from a number of readers, and even a few letters cancelling subscriptions. But the overwhelming reaction from advertisers and readers has been very positive.

What is more important is what many of you who haven't written or called directly are saying; you have been "voting" by sending in renewal subscriptions orders. Interestingly, since we changed our format, the renewals to THE RAINBOW have been higher on a percentage basis than they have been in the last year and a half. This is good news for us and for all of you as well.

What has been the biggest complaint we have received? That it is difficult to get the new format into the binders we sell! I believe this means most of you still (and you should!) consider THE RAINBOW as an outstanding source of information about your Color Computer.

(By the way, we are looking into the binder problem. But Ray Meers, one of our readers from California, wrote the other day to tell us he merely folds the new publication over one of the wires in the binder and it works quite nicely. "Something like the way they display newspapers in libraries," he says. We tried it and it works, it must, because Ray ordered some additional binders with his "tip.")

We keep getting new subscribers, too. Not only is this good news for the health of THE RAINBOW, but it is interesting what these new readers are saying. John Walker of Wisconsin wrote us to say that he has finally given up on his Apple II "and was lucky enough to be able to buy a CoCo from a friend who had two systems. One look at THE RAINBOW was enough; I wouldn't be without it."

John ordered all the back issues we had, too. Which, incidentally, brings me to a gentle reminder: some of our back issue supplies are running a bit low. We considered selling every one of them in a set as a sort of "CoCo Encyclopedia," but decided not to do that at this time because many of you have a bunch of them and we thought it might be more difficult to do it that way than not. If you are interested in back issues, now is a good time to order them.

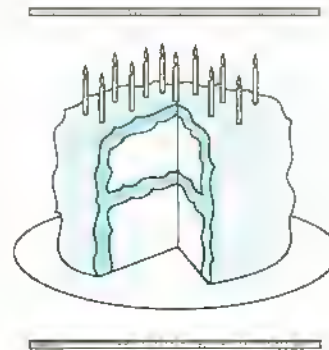
It is probably fair to say that the CoCo has won a whole lot of converts in the past year. This is something fairly amazing for a system which has not been manufactured in several years. But when you look at it, the Color Computer has as much power as any of us will likely need in the foreseeable future. I wrote about this a few months ago, so I will not belabor the point — my mail seems to agree with me, anyway. Although, I think it only fair to report that it seems I have stirred up something of a hornet's nest — obviously some members of the CoCo Community have misinterpreted what I

wrote in the May issue. I'll try to explain it better this time.

I am not advocating that anyone with a CoCo "exchange" to an MS-DOS system. I continue to use and appreciate all the many, many things our CoCos can do. Neither am I advocating MS-DOS as a substitute in any way for OS-9 as it is implemented on our Color Computers.

What I am saying, however, is that I do not see the new "CoCos" as a viable alternative if you want more power and more software options than are now available with your Color Computer. We have researched these machines, tested them extensively and looked carefully at the software market. We do not see them as a viable option for your Color Computer.

I do not see these 68xxx-based machines surpassing your Color Computer in usefulness for the simple reason that I don't believe there will ever be as great a software base for them as there is now for the CoCo.



And the same is true for MS-DOS. I advocated — and still do — that you use your CoCo simply because it is a great computer. But I also said — and still say — if you are going to look for another computer, I believe the obvious choice is not some poorly supported 68xxx-based machine, but an MS-DOS computer.

There is one more issue that has prompted a couple of letters in the past week. Upon reading that, I changed the cover from an "illustration" format to a "news" format at the last minute, thus adding space for actual information, a few of you wrote to suggest I might wish to eliminate this column from THE RAINBOW's pages for the same reason.

While I have used "Print#-2" for years to communicate with the CoCo Commu-

Letters to the
RAINBOW

In Place of the DMP-130

Editor:

I have enjoyed THE RAINBOW thoroughly for more than seven years and look forward to many more. I am truly a die-hard CoCoist (I have a CoCo 1, a CoCo 2, a CoCo 3, two disk drives, a DMP-130 and a CGP-115.

My biggest fear is that I will be left in the dark should something happen to my DMP-130? Will you please furnish me with information about printers that could replace the DMP-130 without my having to make changes to the hundreds of programs I now have? I really want to buy a 24-pin printer for letter-quality printouts. I currently use a serial/parallel converter with my printer.

I have checked with several different Radio Shack stores and printer outlets for this information. So far I have found no one who can be certain what printer will do the

job. I must admit that the idea has some merit. And I am asking for some input from all of you. Of course, when important things happen, you will find me here in this space. But otherwise, we could devote it to CoCo news and information.

What do you think? Drop me a line and let me know. I will appreciate your input (and my feelings won't be hurt if you agree with this idea).

I used to publish a list of people who I believed helped the CoCo Community the most during the past year, but as the list got longer and longer, I dropped it for fear of leaving people out. I am not going to revive the practice this time — primarily because the list would be thousands of names long and would include all of you.

Yes, what has made the Color Computer this past year has been each of you. Your loyalty to the CoCo Community, to our advertisers, to THE RAINBOW and, most of all, to each other.

Long live CoCo!

I do hate to close this column on a sad note, but I must. I would probably not be the publisher had I not had the benefit of the wonderful guidance, skillful business acumen and profound advice of a dear and good friend who was an integral part during much of the early development of both THE RAINBOW and Falsoft, Inc.

Kenny Hirsch passed away in January of this year. The story that ran in the local newspaper the day after Kenny left us said he was a business leader who was active in civic affairs, listed numerous boards and commissions on which he served, and mentioned many of his achievements.

But what mere ink on newspaper could never express was that he was a great and dear man, profoundly loved by everyone he knew. And Kenny knew thousands. To see him greeting his friends each May at the Kentucky Derby — wearing some of the most outlandish combinations of pants and sportcoats I have ever seen — was almost as much a harbinger of spring as the tulips in the gardens at Churchill Downs on the first Saturday in May.

The first Saturday in May is gone, and so is my friend. I miss him terribly. The beauty of his life — an all-too-short 49 years — abides among all who knew him as a loving benediction.

— Lonnie Falk

job. I would really appreciate any information you can furnish.

Robert Walls
110 Ellis Lane
Fallbrook, CA 92028

While you might get lucky and find an older unit in a Radio Shack back room, Tandy no longer produces printers that support Tandy printer codes. All newer Tandy printers support only IBM/Epson codes. The DMP-130 supports both Tandy and IBM/Epson modes. If you are currently using your DMP-130 in the IBM mode, you shouldn't have much problem replacing it with any dot-matrix printer currently on the market. However, if you have configured your software for Tandy DMP-130 codes, you'll have to reconfigure the software when you replace the printer. We know of no printers currently available that support the older (now obsolete?) Tandy codes.

MVBanner Review Correction
Editor:

I would like to point out an error in the

product review of MVBanner (April 1992, Page 7). The review indicates that the Roman font does not support numbers and/or special characters. After talking with Zack Sessions of ColorSystems, I learned an older version of MVBanner was accidentally submitted for review. The mistake was found and a correct version was submitted. Unfortunately, the reviewer did not see that the Roman font in the new version does support the entire ASCII character set. If anyone has purchased MVBanner and finds it has an incomplete Roman font, please notify ColorSystems to receive a free replacement.

Bruce Geren
346 E. Papago Drive
Tempe, AZ 85281

Computing from a Distance

I currently subscribe to THE RAINBOW, and I have a CoCo 3 with 128K. What kind of disk drive can I use with my computer? Also, what kind of printer is compatible with it? Is there a Tandy showroom in Saudi Arabia?

Muhammed Younas Khan
P.O. Box 50
Zuqfi City 11932
Kingdom of Saudi Arabia

The Color Computer can be used with just about any disk drive, though you must have a disk controller that supports the drive you want to use. Unfortunately drive controllers for the CoCo have become mighty scarce. Most any printer can be used with the Color Computer. Several RAINBOW advertisers offer disk-drive systems and printers for the CoCo — contact these companies for specific information. We called Tandy Corporation in Fort Worth and were told there is an outlet in Hofuf.

It's in There!

When I bought a 512K CoCo 3 from Microcom, included was a Performance Peripherals Memory Test program (on disk) that detects no memory errors in the 512K machine. However, when I first turn on the computer and enter PRINT MEM, the screen indicates the available memory is only 22,824. That is less than the 24,872 start-up memory a straight 128K CoCo 3 has and far less than 512K. The Microcom representative I consulted about this strange situation could not give me a reason for it but said their own 512K CoCo 3 does the same thing. Can you tell me why the computer gives this misleading information; and is there a way I can find out the current memory available, if I need to, when I am using the computer?

Frank Price, Jr.
1420 Pilot Drive
Cookeville, TN 38501

Your CoCo 3 is normal. The 68B09E microprocessor used in the Color Computer 3 provides a 16-bit address bus, which means the chip can have only 64K in its address space at any point in time. The CoCo 3 uses some fancy memory-mapping techniques to gain access to larger amounts of memory.

When you turn the computer on, much of the upper 32K of the mapped 64K space is reserved for the BASIC interpreter. In addition, several blocks in the lower half are allocated for tasks other than BASIC programs. The end result is that you get 22,824 bytes of free memory from a disk-based CoCo. (Try plugging the disk controller into that 128K machine and you'll get only 22,824 bytes free — the disk controller eats about 2K.) Programmers can take advantage of the full memory complement using "bank switching" techniques, but BASIC itself does not internally support any way to gain more than about 32K for programs. PRINT MEM reports only the memory available for BASIC programs.

Multicolumn Directories Revisited
Editor:
The April 1992 issue of THE RAINBOW includes an article on multicolumn directories (Page 10). It may be of interest to you and others that there are three other "on-line" commands for performing similar functions. The command line

WIDTH 40:POKE &HFED4,20:DIR

generates a two-column directory of the disk in the default drive on a 40-column screen. Use a valid drive number (0 through 3) after DIR to get directory listings for other drives. Always press CLEAR after using this command and before any other two-column listings or screen printing. Use the WIDTH command to return the screen to normal operation.

The second on-line command similarly generates a two-column directory listing on an 80-column screen:

WIDTH 80:POKE &HFED4,40:DIR

The third command line

WIDTH 80:POKE &HFED4,20:DIR

can be used to list a directory in four columns on an 80-column screen. The second and third command lines above do not require that you press CLEAR when you are finished.

George Bethea, Jr.
1 South Lavence Avenue
Elmsford, NY 10523-2213

Ghana Bwana on the CoCo 3?

I have both a CoCo 2 and a CoCo 3. I originally purchased Ghana Bwana for use on my CoCo 2 and would like to use it on the CoCo 3 if possible. Is there a patch to make Ghana Bwana work on the CoCo 3?

Jim Ferrett
1806 Jefferson Street
S. Greensburg, PA 15601

You're in luck! Such a patch, written by Steve Bjork, appears in the form of a BASIC program listing on Page 74 of the May 1991 issue of THE RAINBOW. This patch is also available for downloading from the CoCo SIG on Delphi.

CoCo 3 with a CoCo 2 Drive?

I recently bought a Color Computer 3 with a disk drive. The problem is that the disk drive is not reading disks at all. I was told by Radio Shack that this drive is for a CoCo 2. Why won't this drive work on any CoCo, and where can I buy the right disk drive?

Cela Caballero
1064 N. 125th Apt. A
Layton, UT 84040

There is no distinction between a CoCo 2 drive and a CoCo 3 drive. Any Radio Shack disk drive system that will work with the CoCo 2 will also work with the CoCo 3. (However, older CoCo 1 disk controllers require 12 volt, which isn't supplied by either the CoCo 2 or CoCo 3.) Assuming your CoCo 3 wasn't in the high-speed mode when you saved the programs and files your system can't read (the high-speed mode often garbles data, making it unreadable),

we would suspect a physical problem in the drive or disk controller.

CoCo Club Linkup

Recently I had occasion to write to all the CoCo Clubs listed in THE RAINBOW. I received two letters that were undeliverable. I would appreciate a letter from any members of the Tucson Color Computer Club or the Marysville Club.

David Graham
P.O. Box 10552
Enid, OK 73706

Artifact Color and the CM-8

I recently purchased a CM-8 monitor and find I am unable to see color when running Mickey's Space Adventure, Donald Duck's Playground or Winnie The Pooh. These programs are trademarked by Sierra On-Line.

I wrote a letter to Sierra a couple of months ago to see if there is any way I can run the programs in color on this monitor, but I have not yet received a reply. I decided that perhaps the readers of THE RAINBOW could help in some way. If any of you know of patches for these programs (and where they are available), I would appreciate hearing from you.

I like the new concept created for the magazine. It is not as easy to store as previous issues, but at least we are still uppermost in the minds of THE RAINBOW staff. That is more than I can say about some of the other vendors, who quickly turned their backs on us. Because of the lack of support shown by them, we need you more now than we ever did. Keep up the good work.

Cliff De Boer
1435 Ohio Street
Racine, WI 53405

Double-Sided Wines
Editor:

I have been a RAINBOW reader for about four years and would be lost without it. I enjoy THE RAINBOW very much.

I have a CoCo 3 with an FD-502 double-sided disk-drive system. My problem is that I cannot seem to configure a 40-track system disk under OS-9 Level II. I have followed the directions (THE RAINBOW, December 1988, Page 186) without success.

The first disk boots fine with 35 tracks, and I can format a disk with 40 tracks. I then use cobbler to print the OS-9 boot on the second disk and use dsave /d0 /d1 /shel1 to install the rest of the directories and files. But the disk won't boot. Can you help? Do I have to have 512K to make it work?

Clifford Ernst
Route 1, Box 84
Audubon, MN 56511

See "OS-9 Hotline" on Page 17 of this issue for information about creating bootable double-sided, 40-track systems disks with OS-9 Level II.

THE RAINBOW welcomes letters to the editor. Mail should be addressed to: Letters to Rainbow, The Falstaff Building, 9509 U.S. Hwy 42, P.O. Box 385, Prospect, KY 40059. Letters should include the writer's full name and address. Letters may be edited for clarity or to conserve space.

Letters to the editor may also be sent to us through our Delphi CoCo SIG. From the CoCo SIG > prompt, enter RA1 to get to the Rainbow Magazine Services area of the SIG. At the RAINBOW > prompt, enter LET to reach the LETTERS > prompt, then select Letters for Publication. Be sure to include your complete name and address.

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Base Conversions Simplified

Most computer users and programmers at some point find it necessary to convert values from one number system to another. The problem is that converting between number systems often involves some unwieldy (albeit simple) calculations.

When the programmers at Microsoft wrote BASIC for the Color Computer, they included a couple of features that make conversions between decimal (base 10) and Hex (base 16) values fairly easy. To convert a decimal value to Hex, you can enter `?HEX$(xxx.x)`, where xxx.x is the decimal representation for the number. (The ? symbol is shorthand for PRINT in the CoCo's BASIC.) To get from Hex to decimal, you can enter `?&Hyyy`, where yyyy is the hexadecimal number you want to convert.

Unfortunately, however, Microsoft did not include support for binary (base 2) numbers, and the `HEX$` function can't handle numbers larger than `$FFFF` (decimal 65535). This poses a problem for CoCo 3 owners, whose computers have more than 64K of memory. I wrote `Convert` to overcome these limitations.

`Convert` is a simple CoCo 3 utility designed to convert values between decimal, hexadecimal and binary. Since it uses 80 columns, you'll need a monochrome or RGB monitor to see the text onscreen. When you run the program, you'll see the message `PRESS ENTER TO ACTIVATE` blinking near the middle of the screen. Above this are the words `Hexadecimal`, `Decimal` and `Binary`, and an arrow points to `Hexadecimal`. If

the right and left arrow keys to move the arrow so it points to the name of the number system from which you want to convert (the input base), then press `ENTER`.

When you have selected an input base, the cursor moves to the input box at the lower-left portion of the screen. The limits for the input base you have selected are also displayed in the box. Simply enter the number you want to convert. About a second later, you'll hear a beep and the number is displayed in all three bases on the lower-right portion of the screen.

After the results are displayed, the original value disappears from the input box and the cursor returns. If you want to continue converting numbers from the selected system, simply enter another number. To change to another input base, press `ENTER` by itself and the cursor is returned to the top part of the screen. To exit from `Convert`, hold `SHIFT` and press `BREAK`.

All three input bases are selective, which means the program will not accept values that do not fit the selected base. In other words, the decimal input base won't allow you to enter a value that contains any alphabetic (usually implying Hex) characters.

The input range for the decimal base is 0 through 1048575. The Hex input range is limited to values between 500000 and `$FFFF`, and the binary converter accepts values from 0 through 1111 1111 1111 1111. Leading zeros are not needed for any input base. When entering binary values, you can use periods anywhere in the

number. However, `Convert` does not perform fractional conversions — the fractional portion of, say, 123.52 is truncated before the conversion.

The strange character that looks like a roofup (^) in some of the program lines is called a caret. It is used by many computers to indicate the mathematical operation of raising a number to a power (e.g., 3^2 is the same as 3^2, which is 9). You can generate this character from the CoCo keyboard by pressing the `np` arrow.

George Quellhorst has owned and used Color Computers since their introduction, and he especially enjoys writing programs for his CoCo 3. George may be contacted at 203B Meadows Drive, Painesville, OH 44077-5361, (216) 354-3812. Please include an SAS# when requesting a reply.

CoCo 3

The Listing: CONVERT

```

1 'BASE CONVERTER
2 'BY GEORGE QUELLHORST
3 'COPYRIGHT (C) 1992
4 'BY FALSEFT, INC.
5 'RAINBOW MAGAZINE
10 ' CONVERSIONS. By: George Due
11horst. Latest update: T2/85/T9
90
20 POKE55497...:RGB: CLEAR2000:PAL
            
```

```

ETTE0.56: PALETTE2,63: PALETTE3,8:
PALETTE8,8: PALETTE9,32: W1DTH80: C
L51: POKE140, 180: EXEC43350: S#-CHR
$(252): POKE63372, 65: POKE65434, 56
: POKEAHF0F, 0: POKEAHF4F, 0: POKEA
HF69C, 0: POKE4TS98, 255: ONBRKG0TD5
50
30 LOCATE3,1: ATTR0,0: PRINT"C O N
V E R S I O N S . BY: GEORGE
QUELLHORST - C O N V E R S I O
N S"; LOCATE3,2: PRINTSTRINGS(73
,45)
40 LOCATE10,4: ATTR1,0: PRINT"UP/A
RRDW POINTS TO INPUT BASE IN EFF
ECT AFTER PRESSING ENTER"; LOCAT
E6,6: PRINT"HE X A O E C I M A L
"; LOCATE38,6: PRINT" D E C I M A L
"; LOCATE63,6: PRINT" B I N A R Y "
50 LOCATE3,12: ATTR1,0: PRINT"PRE
S ENTER ONLY TO SWITCH INPUT BAS
E"; LOCATE55,12: PRINT"RETURN VAL
UES:"; X(T)=T5: X(2)=43: X(3)=67: Y
?: LOCATE15,Y: ATTR3,3: PRINT" ^
"; ATTR0,0: P=T
60 LOCATE42,14: PRINT"DECIMAL....
"; LOCATE42,17: PRINT"BINARY....
"; LOCATE42,20: PRINT"HEXADECIM
AL:"; LOCATE3,22: PRINTSTRINGS(73
,45); LOCATE25,23: ATTR1,0: PRINT
PRESS SHIFT / BREAK TO ESCAPE";
70 LOCATE3,9: ATTR0,0: PRINT"USE
LEFT AND RIGHT ARROWS TO CHOOSE
DESTINED INPUT BASE"; FORT=J2T0I
: LOCATE40,T: PRINTS%; NEXT: LOCAT
E3,T1: PRINTSTRINGS(73,45):
80 ' input mode select.
90 LOCATE28,10: ATTR1,T,0: GOSUB54
0
100 P#-TKEY$: TFP#="" THEN T00
T10 TPEEK(344)=247 THEN EXEC:P=P+
T: TFP>3 THEN P=T
T20 TPEEK(343)=247 THEN EXEC:P=P-
T: TFP<3 THEN P=3
T30 FORT=TTO3: LOCATEX(T),Y: ATTR2
,0: PRINT" "; NEXT: LOCATEX(P),Y:
ATTR3,3: PRINT" ^"; ATTR1,0
T40 TFP#-CHR$(T3) THEN EXEC: LOCATE
X(P),Y: ATTR3,3: PRINT" ^"; LOCATE
28,10: ATTR0,0: GOSUB540: GOTO150EL
SET00
T50 ON P GOSUB 190,240,280
T60 TFP=T THEN GOSUB430: O=A: GOSUB4
50: GOTO70ELSE JFP=2 THEN A=D: GOSUB
480: GOSUB450: GOTO170ELSE JFP=3 THE
NGOSUB350: A=0: GOSUB4800
170 GOSUB520: GOSUB530: GOTO150
T80 ' Hexadecimal input routine.
190 LOCATE5,15: PRINT"PLEASE INPU
T HEXADECIMAL NUMBER"; LOCATE4,1
7: PRINT"MAXIMUM FFFF - DO NOT I
NCLUDE &H";
200 LOCATE40,19: PRINTS%; LOCATE1
7,19: LINEINPUTB$: EXEC: LOCATE40,T
9: PRINTS%; TFB#="" THEN S10ELSE L
FN(H$)>5 THEN GOSUB530: LOCATE17,19
: PRINT" "; GOTO200
T10 FORT=ITOLEN(H$): Z#-M1$(H$,T
,T): N=INSTR(J,"1234567890ABCDEF
",Z#): TFN=0 THEN GOSUB530: LOCATE17,
19: PRINT" "; GOTO200ELSE NEXT
220 H$=H$: H$="#&H"+H$: RETURN
230 ' Decimal input routine.
240 LOCATE6,15: PRINT"PLEASE INPU
T DECIMAL NUMBER"; LOCATE2,17: P
RINT"MAXIMUM 1048575";
250 LOCATE40,19: PRINTS%; LOCATE7,
19: LINEINPUT0$: EXEC: LOCATE40,T
9: PRINTS%; TFB#="" THEN S10ELSE D=
VAL(0$): TFD=1048575 THEN GOSUB530:
LOCATE17,19: PRINT" "; GOTO250
260 RETURN
270 ' Binary input routine.
280 LOCATE7,14: PRINT"PLEASE INPU
T BINARY NUMBER"; LOCATE2,T5: PR
INT"PERIODS AND LEADING ZEROS NOT
NEEDED"; LOCATE4,T7: PRINT"1111
1111.1111.1111.TTT.TTT MAXIMUM";
290 LOCATE40,19: PRINTS%; LOCATE9,
19: LINEINPUTB$: EXEC: LOCATE40,19
: PRINTS%; TFB#="" THEN S10ELSE L
FN(B$)>24 THEN GOSUB530: LOCATE9,19:
PRINT" "; GOTO290
300 FORT=ITOLEN(B$): A#-M1$(B$,T
,T): TFA#="0" OR A#="T" OR A#="" TH
EN NEXT ELSE GOSUB530: LOCATE9,19:
            
```

Feature Program

What's in Disk File?

`File Peeker` is a simple utility program that allows you to examine the contents of disk files using a CoCo 3. Since the program displays the characters in the file in Hex and ASCII forms (where possible), it is useful for comparing files and learning about how programs are stored on disk. A simpler (yet no less important) application of `File Peeker` is for discovering what's in a file when you are organizing your disks.

To get started, enter the program as shown, save it to disk, then run it. When prompted, enter the name of a file (on the disk in the default drive — usually Drive 0) you want to view (use the eight-character filename followed by a period and the three-character extension). Once you press `ENTER`, `File Peeker` goes to work. On the left side of the screen are the hexadecimal representations for the characters (bytes) in the file; the ASCII forms of the characters are shown on the right side of the screen. If a byte in the file is less than 32 (decimal) or greater than 127, a period is shown in the ASCII representation.

To peek at a file on a different drive, `prt :d` (where d is the drive number—0, 1, 2 or 3) after the filename extension and enclose the whole entry in quotes. For example, to look at a file called `JUNKTEXT.DAT` stored on a disk in Drive 1, you would enter `"JUNKTEXT.DAT:T"`. Be careful when entering filenames; if you specify a file that doesn't exist, Disk BASIC will create an empty file with the entered name.

If you have some experience with BASIC, you might want to modify the program to allow optional printing on paper. Another possible enhancement is to allow some form of "paging" through the file — as written, `File Peeker` scrolls through the entire file without pausing — instead of using `SHIFT-@` to pause the display. The variables used in the program are shown in Figure 1.

`File Peeker` is a handy program, whether you want to compare files or organize your disks.

It should be a useful addition to your CoCo toolbox.

Geoff Friesen has a bachelor of science degree in computer science and mathematics. He is the author of several published articles about computers. He may be contacted at General Delivery, Dauphin, MB R7N 2T3, Canada, (204) 638-7302. Please include an SAS# when requesting a reply.

CoCo 3 Disk

The Listing: FILEPEEK

```

1 'FILE PEEKER
2 'BY GEOFF FRIESEN
3 'COPYRIGHT (C) 1992
4 'BY FALSEFT, INC.
5 'RAINBOW MAGAZINE
10 ' PEEK (FILE PEEKER)
11 '
120 ON BRK GOTO 400
130 S=T
140 B$=""
T50 WIDTH 40
160 PRINT " PEEK (FILE PEEKER) "
T70 PRINT
180 INPUT " FILE NAME"; F$
190 PRINT
200 OPEN "O",#1,F$,T
210 FIELD #1,1 A5 A$
220 FOR I=1 TO LOF(T)
230 GET #1
240 IF A$<" " THEN T20
250 IF A$>CHR$(127) THEN T20
260 MID$(B$,5,1)=A$
270 B#=""&HEX$(ASC(A$))
280 PRINT " " &RIGHT$(B$,2);
290 S=S+1: IF S<9 THEN 330
300 PRINT " " &B$
310 S=T
320 B$=""
330 NEXT I
340 IF S=T THEN 400
350 FOR I=1 TO 9-S
360 PRINT " ";
370 NEXT I
380 PRINT " ";
390 PRINT MID$(B$,I,S-1)
400 UNLOAD
            
```

SUNDOG SYSTEMS

^{NEW} PHOTON



Energy is everything, your home world depends on it. However, someone or something is slowly siphoning it away. As your world's champion, you must climb into the experimental Power Tank to challenge this nemesis and his minions. Your key lies with the ability to teleport onto mass. Use this to manipulate and explore the endless stronghold of the enemy, and to exploit the free-floating DUPES (Diverse Units of Photon Energy) to destroy the menacing Plasma Droids. Be cautious, though. These DUPES can be deadly too! Photon, a fantastic new arcade game for your CoCo3, contains spectacular 320x200 resolution, 16 color graphics, ultra-smooth 60 Hz animation, and loads of real-time music and sound effects. It will send your mind racing over endless possibilities, requiring quick decisions and reactions. Quite simply, Photon is incredibly addictive. It will deliver hours of excitement. Will you become your world's greatest hero, or just another energy slave? Req: 128K CoCo 3 and 1 1/4 drive.

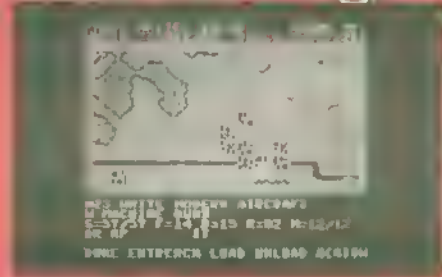
\$34.95

^{NEW} GRA EXPRESS 2.0

GRA EXPRESS is a truly complete, professional quality graphics programming environment from the beginning to the end. From the time you can use GRA EXPRESS to create, edit, run, fast advance frame graphics (sprites, bit-planes, and windowing), through a professional animation package, to the low level, high resolution, hardware graphics (from 128x128 to 320x225) of all video, 750 colors (16-bit resolution), from 128x132 to 60x125, the ultimate boundary for advancement. It can be used as a graphics development tool, or simply as a standard graphics commands. GRAPHICS FILE is a file that blows away the competition. For example, the BOJ (blow-out) is 1013 over 2 MegaBytes/second. It's 300 times faster than BASIC! 256 separate sprites of up to 100x90 pixels each are supplied with window clipping and high-resolution collision checking. The 6-octave 14-note music synthesizer has independent envelope, waveform, and volume controls, a 7 Hz kHz sampling rate, and much more. Other features include text/graphics mixing, arbitrary font sizes, fast window copying and scrolling, picture save/load, easy implementation from both BASIC and assembly language, multiple screen animation, and support for 128K/512K, double speed, and the high-res joystick interface. The package also contains support programs that are worth the purchase price of GRA EXPRESS alone! These include an introductory demo, a picture editor, a waveform editor, and an art program that supports 256 colors! GRA EXPRESS also comes with a 50 page manual that fully explains all of its incredible features. If you do any graphics programming or simply want to see what your little CoCo is capable of, GRA EXPRESS is a must! Req: 128K CoCo 3 and disk drive.

\$34.95

^{NEW} War Monger



The world is in turmoil. Power-hungry villains and evil warlords are eadying their forces. It falls to you to lead your people against these armies, and only your best strategic plans can save the day. Fight the good fight in any era or locale. Play a simple game of capture the flag armed with water balloons, or climb into the cockpit of a 100 foot high armored warner. Explore the deepest dungeons, defend your galaxy, or create your own scenarios with this incredible war game construction set/simulator. Your imagination is your only limit. You will deploy your forces with total control over hostile terrain while you scroll a graphic bird's eye window over an immense world. War Monger has terrific 320x200 resolution, 16 color graphics and includes a tile editor to create or edit your own. Play against the computer, battle with another player, or simply watch the computer plot against itself. The enemy is everywhere. Are you ready to take on the challenge as the War Monger? Req: 128K CoCo 3 and disk drive.

\$29.95

The Quest for THELDA



An immensely popular 128K CoCo 3 arcade adventure. Over 500 screens of fast fantasy action and puzzle solving. Great graphics and sound effects. \$34.95. Mini hook only \$4.95.

★ THE ★ CONTRAS



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This was THE game of 91! Ultra fast space action with hardware scrolling on a 128K CoCo 3. Wild sound effects and pixel 30 MegaBytes of amazing graphics! \$34.95.

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The only scrolling 256K CoCo 3 mini arcade game. Now available on 128K CoCo 3. 3D graphics. Play the ultimate 3D action experience. You've been missing out on the best thing you can buy for your CoCo! \$29.95.

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SUNDOG SYSTEMS

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703/330-8989

```

PRINT " :GOTO290
310 N=INSTR(1,B$, ".") :FN=0 THEN3
20ELSEB$=LEFT$(B$,N-1)+RIGHT$(B$,
,LEN(B$)-N):GOTO310
320 IFLEN(B$)>20 THENGOSUBS30:LOC
ATE9,19:PRINT " :GOTO290
330 B$=STRING$(20,LEN(B$), "0")+B
$:RETURN
340 ' Binary to Decimal.
350 D=0:FOR T=20 TO1 STEP-1:A=VAL(M
IDS(B$,21-T,1)):D=D+A*INT(2*(T-
1)):NEXT
360 A$="":N=INSTR(1,B$,"1"):I:B$
=RIGHT$(B$,LEN(B$)-N)

```

```

370 IFINT(LEN(B$)/4)<LEN(B$)/4
THENB$="0"+B$:GOTO370
380 FOR T=1 TOLEN(B$) STEP4:A$=A$+M
IDS(B$,T,4):":NEXT:B$=LEFT$(A$,
,LEN(A$)-1):RETURN
390 ' Decimal to Hexdecimal.
400 K=INT(D/256):V=D-(256*K):J$=
HEX$(K):IFV=0 THENL$="00"ELSEL$=H
EX$(V)
410 H$=J$+L$:RETURN
420 ' Hexdecimal to Decimal. In
put &H$ / Output A
430 A=VAL(H$):RETURN
440 ' Decimal to Binary.

```

```

450 IFD>65535 THENL=19ELSEIFD>409
5THENL=1ELSEIFD>255 THENL=11ELSE
1FD>15 THENL=7ELSEL=3
460 A$="":B$="":FOR T=L TO 0 STEP
-1:B=INT(D/INT(2^T))
470 IFB=>1 THENA$=A$+"1":D=D-INT
(2^T) ELSEA$=A$+"0"
480 NEXTT:L=LEN(A$)
490 FOR T=1 TO L STEP4:B$=B$+MID$(
A$,T,4):":NEXT:B$=LEFT$(B$,LEN
(B$)-1):RETURN
500 ' Miscellaneous gosubs.
510 Z$=STRING$(36,32):LOCATEJ,14
:PRINTZ$:LOCATEJ,15:PRINTZ$:LO

```

```

CATEJ,17:PRINTZ$:LOCATE54,14:PR
INT " :LOCATE54,17:PRINT " :LOCA
TE54,20:PRINT " :GOTO90
520 LOCATE4,19:PRINT " :LOCATE40
,19:PRINT$:LOCATE54,14:PRINTA:
LOCATE55,17:PRINT$:LOCATE55,20:
PRINTH$:RETURN
530 POKE140,180:FORZ=1 TO25:EXEC:
NEXTZ:RETURN
540 PRINT " PRESS ENTER TO ACTIVA
TE":RETURN
650 CLS1:POKE41596,3:POKE63372,1
1:POKE65496,0:ATTR0,0:STOP

```

Feature Program

Intersection: A Leisurely CoCo Game

Have you been feeling "undet the gun" lately? Tired of playing games where all your actions are timed? Well, here's *Intersection*, a game where you don't have to race against a clock; all you have to do is think a little. In fact, taking your time may actually increase your score with *Intersection*.

The goal of this game is to find the intersection of two lines. Two short segments of the two lines are visible. By extending these segments in your mind, you must locate the location on screen where the lines meet. Although it may sound easy, finding the right spot can be harder than you might think.

Intersection works on any CoCo with at least 16K and Extended BASIC, and requires a joystick. Enter the listing as shown and save it to tape or disk. When entering the listing, CoCo 3 users must replace lines 1220 and 1580 as follows:

```

1220 IF BUTTON(01)=0 THEN 1220
1580 IF BUTTON(01)=1 THEN 1640

```

While the program is running, the right joystick controls a box, or cursor, which you can move around the rectangular playing field. Outside the playing field are the short segments of the two lines you must "intersect;" one comes from the top of the screen and the other comes from the left. Place the cursor where you think the lines will meet and press the joystick button. If you find the intersection point in the first three attempts, you score points. You receive 50 points if you get it on the first attempt; a correct second attempt earns you 25 points, and 10 points are awarded

if you are successful on the third try. There are ten rounds of play.

Some notes of interest about the way the program works are in order. The title screen provides a nice effect by scrolling the word INTERSECT onto the screen. To accomplish this, I first have the program display graphics pages 2 and 3. Then the program sets the computer to PMODE3, which has access to graphics pages 1 through 4. The word INTERSECT is moved downward from the bottom of graphic Page 1 to Page 2, so the word seems to scroll onto the screen from somewhere above.

As for the game itself, graphics pages 1 and 2 are displayed. The rectangle around the playing field, the rectangle around the screen, and the two lines to be intersected are kept on pages 3 and 4. Whenever the cursor is moved, pages 3 and 4 are copied onto pages 1 and 2, and the cursor is redrawn. This way movement is smooth and there is no need to worry about erasing the cursor from its old position.

Other parts of the program are best described by explaining key variables. Variable 0 contains the graphics for the word INTERSECT, which scrolls onto the title screen. FIRST has a value of 1 only before the first game is played, and is zero at all other times. This is to make sure the score shows up on the title screen only after at least one game has been played. Array S\$(0-9) contains the DRAW strings for the

numbers 0 through 9. S1, S2 and S3 are the hundreds, tens, and ones digits of SCORE. For example, if SCORE equals 425, then S1 is 4, S2 is 2 and S3 is 5. The score is broken up this way to make using the strings in S\$ easier.

HBOX and WBOX control the size of the cursor, HDELTA and WDELTA control the size of the playing field. The lines that are to be intersected have endpoints (0,A) and (B,0). They meet at the intersection point given by (CX,CY).

Simple changes you might try include modifying the values of HBOX in Line 1270 and HDELTA in Line 1290. Increasing the value in either (or both) of these variables makes the game easier. A useful addition to the game would be some way to track the high score and display it on the title screen. If you are really into timed games, try adding routines so that the score depends on how fast the 10 intersections are found.

(This would probably be easiest using the TIMER function.)

Hopefully you'll enjoy *Intersect*. A perfect score is 500 points, though you'll need to be very lucky and skilled to get this score. And remember, using rulers to locate intersections is not permitted. Good luck!

Joseph Pen- dell has a degree in electrical engineering from the University of Maryland. In addition to programming the Color Computer, Joseph enjoys using the Macintosh. His hobbies include riding skateboards and playing Super Nintendo.



16K Extended

The Listing: INTRSECT

```

1 'INTERSECTION
2 'BY JOSEPH PENDELL
3 'COPYRIGHT (C) 1992
4 'BY FALSOFT, INC.
5 'RAINBOW MAGAZINE
10 R=ROUND(TIMER)
20 CLEAR 500
30 DIM 0(25)
40 FIRST=1
50 PLAY"L2SST2SS"
60 'TEXT "0" TO "9"
70 S$(0)="U6R4D6L4BR7"
80 S$(1)="R4L2U6G2B04BR7"
90 S$(2)="NR4U3R4U3L4BR7BD6"
100 S$(3)="R4U3NL3U3L4BR7BD6"
110 S$(4)="BU6D3R4U3D6BR3"
120 S$(5)="R4U3L4U3R4BR3BD6"
130 S$(6)="R4U3L4D3U6R4BR3BD6"
140 S$(7)="BU6R4D6BR3"
150 S$(8)="R4U3L4U3R4O3L4D3BR7"
160 S$(9)="R4U3L4U3R4D6BR3"
170 PMODE 3,1
180 PCLS
190 PMODE 1,2
200 SCREEM 1,0
210 PMODE 3,1
220 'TEXT "INTERCEPT"
230 P$="57R1L6D14L6R1BR7"
240 P$=P$+"U14M+11,+14U14BR6"
250 P$=P$+"R11L6D14BR11"
260 P$=P$+"NR11U7NR7U7R11BR6"
270 P$=P$+"N014RBF3D2G3LBR6FSD2BR6"
280 P$=P$+"BU2F2R7E2U4H2L7H2U3E2R7F2BU2BR6"
290 P$=P$+"NR11D7NR7D7R11BR6"
300 P$=P$+"BU2BR11G2L7H2U9U2E2R7F2BU2BR6"
310 P$=P$+"R11L6D14"
320 DRAW"C3"
330 FOR I=2 TO 6
340 DRAW"BM"+STR$(I)+". "+STR$(I)+":XPS:"
350 NEXT I
360 DRAW"C4BM7,7:XPS:"

```

```

370 GET(0,0):(25,33),0,G
380 'START OF TITLE SCREEN ROUTINE
390 FOR I=10 TO 40 STEP 2
400 PUT(0,1)-(25,1+33),0
410 NEXT I
420 PMODE 0,3
430 PCLS
440 PMODE 1,3
450 IF FIRST=1 THEN 750
460 'CREATE BOX TO GO AROUND SCORE
470 DRAW"BM60,109S4C4NH10R128NH10D20L12BNU20H10U20R12B"
480 PAINT(62,110),2,4
490 PAINT(62,104),2,4
500 PAINT(56,110),2,4
510 'TEXT "SCORE"
520 DRAW"BM70,113C45R2WF1L2G1D1F1R2FD1G1L2NH1BR5"
530 DRAW"BR1R2ME1L2H1U4E1R2F1BU1BR2"
540 DRAW"BR1R2FD1G1L2H1U4E1BR5"
550 DRAW"N06R3FD1G1L2R1F2D1BR2"
560 DRAW"NR4U3NR3U3R4BR2BD6"
570 DRAW"BRBC3"
580 'ISOLATE DIGITS OF SCORE AND DISPLAY THEM
590 S1=INT(SCORE/100)
600 S2=INT((SCORE-S1*100)/10)
610 S3=SCORE-S1*100-S2*10
620 DRAW"X5$(S1);X5$(S2);X5$(S3):"
630 PCOPY 4 TO 3
640 IF SCORE<500 THEN 750
650 'SPECIAL EFFECTS FOR GETTING A PERFECT SCORE
660 PMODE 1,2
670 PLAY"V15"
680 FOR I=1 TO 10
690 PLAY"CDEFGB"
700 SCREEN 1,1
710 PLAY"CDEFGB"
720 SCREEN 1,0
730 NEXT I

```

```

740 PMODE 1,3
750 'NORMAL TITLE SCREEN SOUNDS
760 PLAY"V1"
770 FOR I=1 TO 15
780 PLAY"CEGV+"
790 NEXT I
800 FOR I=1 TO 15
B10 PLAY"BDFFV"
820 NEXT I
B30 DRAW"C45BBM46,173
840 'TEXT "PRESS"
B50 DRAW"U6R3F1D1G1L2B03BR5"
860 DRAW"U6R3F1D1G1L2R1F2D1BR2"
B70 DRAW"NR4U3NR3U3R4BD6BR2"
B80 DRAW"BU1F1R2E1U1H1L2H1U1E1R2
F1B05BR2"
B90 DRAW"BU1F1R2E1U1H1L2H1U1E1R2
F1B05BR2"
900 DRAW"BR4"
910 'TEXT "JOYSTICK"
920 DRAW"BU1F1R2E1U5BR2"
930 DRAW"BD1E1R2F1D4G1L2H1U4BU1B
R6"
940 DRAW"M+2,+3NM+2,-3D3BR4"
950 DRAW"BU1F1R2E1U1H1L2H1U1E1R2
F1B01BR2"
960 DRAW"R4L2D6BR4"
970 DRAW"R4L2U6L2R4BR2"
980 DRAW"BR1R2NF1L2G1D4F1R2NE1BR
3"
990 DRAW"U603NE3F3BR2"
1000 DRAW"BR4"
1010 DRAW"BM40,191"
1020 'TEXT "BUTTON"
1030 DRAW"U6R3F1OTG1NL2F1D1G1L3B
R6"
1040 DRAW"BU1NU5FR2E1U5BD6BR2"
1050 DRAW"BU6R4L2D6BR4"
1060 DRAW"BU6R4L2D6BR4"
1070 DRAW"BU1F1R2E1U4H1L2G1D4BD1
BR6"
1080 DRAW"U6M+5,+7NU6BR2"

1090 DRAW"BR4"
1100 'TEXT "TO"
1110 DRAW"BU6R4L2D6BR4"
1120 DRAW"BR1H1U4E1R2F1D4G1L2BR5
"
1130 DRAW"BR4"
1140 'TEXT "START"
1150 DRAW"BU1F1R2E1U1H1L2H1U1E1R
2F1B1BR2"
1160 DRAW"R4L2D6BR4"
1170 DRAW"U4E2F2D1NL4D3BR3"
1180 DRAW"U6R3F1D1G1L2R1F2D1BR2"
1190 DRAW"BU6R4L2D6"
1200 PCOPY 4 TO 3
1210 'WAIT UNTIL FIRE BUTTN IS
PUSHED
1220 IF PEEK(65280)<>126 AND PEE
K(652801)<>254 THEN 1220
1230 FIRST=0:'D15PLAY SCORE AFTE
R NEX1 GAME
1240 X01D=1000
1250 Y0LD=1000
1260 DLAY=10
1270 HBOX=20
1280 WBOX=473+HBOX
1290 HDELTA=40
1300 WDELTA=473+HDELTA
1310 GOSUB 2110
1320 SCORE=0
1330 TRIES=0
1340 ROUND=0
1350 PMODE 1,1
1360 PCLS
1370 SCREEN 1,0
1380 'CREATE GAME SCREEN
1390 PMODE 1,3
1400 PCLS
1410 A=RND(191)-1
1420 B=RND(256)-1
1430 CX=RND(255-WDELTA)+WDELTA
1440 CY=RND(190-HDELTA)+HDELTA
1450 COLOR2,1

1460 LINE(0,A1-(CX,CY),PSET
1470 LINE(B,0)-(CX,CY),PSET
1480 LINE(WDELTA,HDELTA):(255,19
1),PSET,BF
1490 COLOR 3,1
1500 LINE(WDELTA,HDELTA):1255,19
1),PSET,B
1510 LINE(0,0)-(255,191),PSET,B
1520 PMODE 1,1
1530 PCOPY 3 TO 1
1540 PCOPY 4 TO 2
1550 COLOR 4,1
1560 LINE(JX,JY1-(JX+WBOX,JY+HBO
X),PSET,B
1570 GOSUB 2110
1580 IF PEEK(65280)=126 OR PEEKI
65280)-254 THEN 1640
1590 IF XOLD=JX AND YOLD=JY THEN
1570
1600 'JOYSTICK POSITION CHANGED,
NEED TO UPDATE
1610 XDLD=JX
1620 YOLD=JY
1630 GOTO 1530
1640 'PUSHED BUTTON, CHECK IF AT
INTERSECTION
1650 IF CX<JX OR CY<JY OR CX>JX+
WBOX OR CY>JY+HBOX THEN 1910
1660 'GOT IT
1670 TRIES=TRIES+1
1680 FOR I=1 TO TRIES
1690 SOUND 100,1
1700 FOR J=1 TO DLAY
1710 NEXT J,1
1720 IF TRIES=1 THEN SCORE=SCORE
+50
1730 IF TRIES=2 THEN SCORE=SCORE
+25
1740 IF TRIES=3 THEN SCORE=SCORE
+10
1750 ROUND=ROUND+1
1760 'SHOW INTERSECTION

1770 COLOR 4,1
1780 PCOPY 3 TO 1
1790 PCOPY 4 TO 2
1800 LINE(JX,JY)-1JX+WBOX,JY+HBO
X),PSET,B
1810 COLOR 2,1
1820 LINE(0,A)-(CX,CY),PSET
1830 LINE(B,0)-(CX,CY),PSET
1840 FOR I=1 TO 50
1850 PSET(CX,CY,2)
1860 NEXT I
1880 TRIES=0
1890 IF ROUND=0 THEN 1990
1900 GOTO 1380
1910 'MISSED IT
1920 TRIES=TRIES+1
1930 FOR I=1 TO TRIES
1940 SOUND 1,1
1950 FOR J=1 TO DLAY
1960 NEXT J,1
1970 IF TRIES<3 THEN 1590
1980 GOTO 1750
1990 FOR I=1 TO 1500
2000 NEXT I
2010 'GET READY FOR TITLE SCREEN
2020 PMODE 1,2
2030 PCLS
2040 SCREEN 1,0
2050 PMODE 0,1
2060 PCLS
2070 PMODE 0,4
2080 PCLS
2090 PMODE 3,1
2100 GOTO 380
2110 'FIND OUT WHERE TO PUT CURS
OR ACCORDING TO JOYSTICK
2120 JK=JOYSTK(0)/63*(255-WDELTA
-WBOX)+WDELTA
2130 JY=JOYSTK(1)/63*(190-HDELTA
-HBOX1)+HDELTA
2140 RETURN
    
```

Product Review

4D Checkers:
On the Level

The idea behind *4D Checkers*, a CoCo 3 game from N*Johnson Software (Nick Johnson), is a very good one. Imagine a stack of three 3-by-3 grids with nine black and nine red checkers distributed among the levels. Now add a wildcard "transport square" for a little spice. What you're probably seeing in your head looks something like a cross between tic-tac-toe and checkers — with hints of pieces "beaming" across the ether (just remembering the chess scenes from old *Star Trek* episodes).

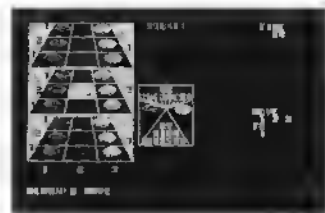
That's just about the image I had in my head when I received *4D Checkers* for review. After playing for a few minutes, I scaled down my expectations. It's not that the game is bad — it isn't. *4D Checkers* simply fails to live up to its potential. First let's talk about the game, then I'd like to make some suggestions to Mr. Johnson, because I really like his concept.

4D Checkers plays like traditional checkers in the sense that it requires two players, and the checkers move one space at a time and can capture other checkers by jumping them to a blank square. After a red piece jumps a black piece, for instance, the black piece is removed from the board and the red player receives a point. The goal is to get rid of all the other player's checkers. There the similarity to regular checkers ends.

In *4D Checkers* the board is smaller, you can't be kinged, and pieces can move (and jump) in any direction — vertical, horizontal or diagonal — while traditional checkers are limited to diagonal movement. Then of course there's *4D Checkers*' most interesting feature, which traditional checkers lacks: the flashing yellow transport square.

After you move a piece onto the transport square, it mystically reappears somewhere else; relocation on any of the three levels is possible. If your transporting checker lands on a piece belonging to the other side, the opponent's piece disappears and you gain a point. If you land on one of your own checkers, you lose that piece and also the point. If you land on a

blank square, no points are gained or lost. Be careful when transporting: blind chance may place you in a position to make a jump, or it may transport you into peril. In the most difficult level of play, the transport square is invisible, which makes for some surprising moves.



A coordinate system is used to tell the computer how to move — three numbers for level, column and row. You type the coordinates of the piece to be moved, then type the coordinates of the destination square. If you mess up, you can't backspace to correct your mistake; you must press the CLEAR key to start over. If you have a Speech/Sound Cartridge, you can hear the computer tell you when you are

trying to make an illegal move. The SS/C routine also announces whose turn it is, when time is up and who won the game.

Now for the suggestions, Mr. Johnson, most people who play board-type games on their computers don't bring along a friend (I had to find someone to sit at my cramped computer desk in order to help me review this). I would like to see a one-player mode in which the player could take on the computer. [Editor's Note: Mr. Johnson has informed us a version supporting a one-player mode is near completion.] Also, the image of the three boards, which now takes up just the upper-left corner of the screen, would look better if expanded to fill most of the screen. Finally, the red and black pieces are just about impossible to distinguish on the old monochrome monitor I hooked up (though the colors show up fine on my RGB).

Your game is all right as is, Mr. Johnson — no bugs could I find — but I think it could be much better. (N*Johnson Software, 5830A Reinke Drive, Crestview, FL 32336, (904) 682-2907; \$14.95.)

—Margaret Gividen

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Databases Fixed

The OS-9 SIG rearrangement is finally complete!

The OS-9 SIG databases are now in their final form. The only change left remaining is fixing the keywords in certain databases; even that should be finished by the time this reaches print. Figure 1 shows the databases in their final form.

Notice that there are two versions of the Applications, Telecom and System Modules databases; one for the CoCo and other 6809-based machines (6809) and another for 680x0-based machines (OSK). The other databases are shared between 6809 and 680x0 machines. Next month I'll give a quick description of what belongs in each database so you'll know where to look when trying to find a file.

General Information
Applications (6809)
Telecom (6809)
System Modules (6809)
Games & Graphics
Music & Sound
Programmers Den
OSK Applications
OSK Telecom
OSK System Modules
Tutorials & Education
Standards
New Uploads

Figure 1: New Database Topics

Editing Online

Remember last month I described host echo and how to turn it on and off. Now I'll describe EDT (the standard VAX/VMS editor) in normal and full-screen mode. EDT can be used in your workspace when submitting a file to the database, sending mail, or sending a forum message.

Before continuing, I should explain how to select your default editor. From any SIG prompt, type:

```

OS9> set
PREFERENCES> editor
Current Editor Preference: (no preference)
Would you like to change it? (Y/N) y
Here are your choices:
0101e Is a simple line numbered editor.
EDT is a more powerful editor with optional VT100 full screen mode.
If you don't specify a preference, EDT will be selected for you if needed.
Enter DLDE, EDT, or press RETURN; edt
Your record has been updated!
PREFERENCES> ^Z
OS9>
    
```

I selected EDT as my default editor. Remember that I could also have typed SET EDITOR at the OS9> prompt to choose my editor. (From most places on Delphi, you can combine several commands on one

line.) The messages above state that EDT is the default editor unless you specifically chose one, so you may not need to enter these commands. To see your current editor setting, enter:

```

OS9> /edit
/E01TOR = EDT
OS9>
    
```

You can also use this slash command to change your editor for the duration of this session by typing /E01T EDT. (You make this temporary setting permanent by entering the /SAVE command.) As you can see, there is always more than one way to do what you need to do. Choose the method you find easiest.

Now let's get back to editing. You have selected EDT as your default editor. Now what? Well, let's send a forum message and edit it. Let's start at the forum prompt. Assuming I've just read Message 54025 and I want to reply to it, I can type:

```

FORUM> file temp.txt
E011ng 54025
Message written to new file TEMP.TXT

Press RETURN to resume "READ 54025:"

I just wrote the contents of Message 54025 into the file named TEMP.TXT in my workspace. Why did I do this? I want to include part of the text of the message to which I'm replying.

FORUM> reply
To: [PHILSCHERER]
Subj: RE: C
Please enter your message below.
Control-Z when Complete. /HELP for Help.
/edit
[EDB]
'
    
```

We are now in EDT. Notice EDT's prompt: *. When you see this prompt, EDT is in line mode waiting for you to type a command. There are a great many useful commands, the most helpful of which is HELP. The commands I will cover are: +, -, DELETE, INSERT, EXIT, QUIT, TYPE, INCLUDE, SUBSTITUTE, and RESEQUENCE — I will cover only the simplest ways of using these commands. EDT is a very powerful editor that, at its most complex level, allows you to edit multiple files at once and to cut and paste between files (you will probably never need such complicated editing while on Delphi).

```
*include temp.txt
```

The entire file TEMP.TXT is now included in the edit buffer at the current cursor position — the beginning of the file since we haven't done anything else yet. If there is some text in the file, you can use the + and - commands to step through the text, much like Microware's edit. + advances five lines, - backs up one line. The ENTER key also acts like the + command, advancing a single line at a time. The current line is printed after these commands. You rarely want to include the entire message to which you are replying. If I want only lines one through five of a 20-line message, I could type:

```
*delete 6:20
```

to delete all other lines. Notice that a line range is specified using a colon, not a dash. Now I'm ready to add my text. First I want to quote Phil Scherer's text:

```
*insert 0,5
```

```
.lm 4/annot=>
^Z
```

I inserted my text starting at Line 0.5. I exited insert mode by pressing CTRL-Z. EDT allows floating-point line numbers larger than 0, and the first line number is always one by default. Thus, .lm 4 /annot=> precedes the first line I included. Now I need to remove the quoting and reset the left margin:

```
*insert 6
Jim 0
```

I am still in insert mode and can now enter my reply. When I finish, I will press CTRL-Z to exit insert mode. If I want to examine what I've typed, I can enter:

```
*type 0:20
```

to list the first lines of my message, which may be more than 20 lines because of non-integer line numbers. If I'm satisfied with the message, I can exit EDT and send the message by entering EXIT. This drops me back into Delphi's editor, where I can press CTRL-Z or use the command /EXIT to get back to the FORUM> prompt. If, instead, I enter QUIT to quit EDT, I'll exit EDT without saving any of the changes I made but will still be dropped back into Delphi's editor.

If you get confused by the non-integer line numbers, you can enter RESEQUENCE to reorder the line numbers to integers starting at one. This is the simplest use of the resequence command. Type HELP RESEQUENCE to find more information.

Finally, if you need to change part of the text of a line, you can use the SUBSTITUTE command. If the current line is

```
12 machine w/ 15 MIPS
(meaningless index of plummeting speed) and a
```

and I want to correct *indlax* to *index*, I would type:

```
*sub ;indlax;index;
I substitution made
```

EDT reports it made one substitution. Notice I used the semicolon to begin and end the initial and final string. Any punctuation character will work. Most people use semicolons or slashes, but you must use the same character all three times.

You can also repeat a substitution on many lines; add the line range to the end of the command.

```
*sub ;receive;recieve; 1:99
```

This corrects the spelling of receive throughout a file (if the file's last line is smaller than 99). The SUBSTITUTE command, when given a line range, will replace the string more than once per line if it is found more than once in a line. Without a line range, only the first instance is replaced on the current line.

New Uploads

Jim Sulemeier (JSUTEMEIER) studied the abilities of four different file compression programs with OS-9/68000: ar, ARC, LZARC, and ZOO. If you are looking for the best compression program, his upload to the OS-9 SIG General Information database will help your search. Phil Scherer (PHILSCHERER) contributed several issues of the OCN (OS-9 Community Network) newsletter. The OCN is a relatively new organization striving to tie together OS-9 users into a solid community.

If you use mroff to format text, you

might be interested in Joel Rees' (REISIKENKYU) upload, which explains how to enable the +p (page offset) option. John Semler (SEMLER) released a scientific calculator program that works with both OS-9/6809 and OS-9/68100. Astronomers among us will appreciate Jim Martin's (WOAY) almanac, which calculates right ascension and declination of the Sun, Moon, and Mercury through Pluto as well as other astronomical information. Robert Kemper (BOBKEMPER) submitted pels, which sends a formfeed to your printer.

In the Music & Sound database, Mike Knudsen (RAGTIMER) released a program that allows recording (digitizing) and playing stereo audio on the MM1; he also uploaded a digitized sample. Joel Rees uploaded many files to the Programmers Den database, including BASIC09 and PASCAL09 programs that allow you to use include files with BASIC09 and PASCAL09. He also uploaded a partial list of bugs in the Microware C compiler used on the CoCo.

In the CoCo SIG CoCo 3 Graphics database, Joe Sannucci (SANNUCCI) uploaded a practical joke program (TRICK); try it! He also uploaded updates to Chet Simpson's *Image Master*, a sprite creating program. Jerry Brumby (JERRY79) released a horse handicapping program into the Utilities & Applications database. Joel Rees contributed a threaded dialect of FORTH. Richard McNabb (RICKMAC) released a number of programs, including one that numbers the lines of a file so you can print it and another one that helps convert assembly-language source files so they are legal with EDTASM. His Book Utility allows you to print on both sides of paper. Robert Newhart (BNEWHART) submitted a calculator program that includes interest rate and ham radio antennas in addition to other features. Jerry Campbell (6147) uploaded a handful of CoCoMAX clipart files into the Classic Graphics database.



DATABASE REPORT

OS-9 SIG

General Information	
6BXXX MACHINES	ADVERTISEMENT
EDELMAR	Ed Gresick
G-WINDOWS ANN. FOR SYSTEM IV	
EDELMAR	Ed Gresick
STATS. ON 4 DIEREKI ARCHIVERS	
JSUTEMEIER	Jim Smeieier
PHL'S NEW QT 6030 ANNOUNCEMENT	
PHOGG	Frank Hogg
OCN NEWS LETTERS THRU JAN. 1992	
PHILSCHERER	Phil Scherer
FIRST ANNUAL LAST COCOFEST	
DAVENYERS	Dave Myers
Applications (6809)	
MROFF PRINT EORMATTER UPDATE: -P	
REISIKENKYU	Joel Rees
SCALC: SCIENTIFIC CALCULATOR	
SEMLER	John Semler
GRAND MASTER CHESS 0.9	
MATIOMPSON	Matthew Thompson
PRINTFORM 2.1: TEXT EORMATTER	
WOAY	Jim Martin
ALMANAC	
SEMLER	John Semler

FF: FIND FILE
MEYF001 Homer Meyer
PCLS V1.5 PAGE EJECTOR
BOBKEMPER Robert Kemper

Telecom (6809)
MEDIT V1.9 PATCHES
AIRWOLF2 Aaron Yates
CRC LIST FOR RBBS 2.02
SANDRIDER Charles West

Games & Graphics
TARGA: 24 PIX TO GIF PIX
GRAPHICSPUB Bob Monjowski
YET ANOTHER REVERSI (YAR)
REHSIKENKYU Joel Rees

Music & Sound
STEELDRUM STEREO SOUND SAMPLE
RAGTIMER Mike Knudsen
REPLAY: RECORD/PLAY STEREO SND
RAGTIMER Mike Knudsen
MIXED ASSORTMENT OF UMUSE3 SCDFE
MISTIOO Mike Shook

Programmers Den
SORT ALGORITHMS FOR BASIC09
SANDRIDER Charles West
ITALIC/SCRIPT FONT FOR COCO
REHSIKENKYU Joel Rees
EILE INCLUSION PROCESSORS
REHSIKENKYU Joel Rees
MORE BUGS FOR MWC
REHSIKENKYU Joel Rees

OSK Applications
SEA ARC VRS. 5.21 FOR OSK
MIKTHAALAND Mike Haaland

OSK Telecom
TERMCAP/TERMSET FILES FOR TC-70
JSUTEMDIR Jan Sutemier
GAURDIAN: EIX FOR MM/1 /70 PORT
RANDYKWILSON Randy Wilson

OSK System Modules
MM/1 MODULES UPDATE (REVISED)
MARKGRIFFITH Mark Griffith

Tutorials & Education
GETTING STARTED WITH MV
EARTHER Shawn Driscoll

Standards
OSK GRAPHICS / SOUND PROPOSAL
DONVAIL Don Vaillancourt

COCO SIG

General Information
CHIFFEST.TXT
DAVENYERS Dave Myers

CoCo3 Graphics
NEW IMAGE MASTER VERSIONS
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SAVE COMPRESSED HSCREENS
RICKMAC Richard McNabb
TRICK
SANNUCCI Joe Sannucci

Utilities & Applications
HORSE-PRO(DEMO)
JERRY79 Jerry Brown
BIF DIALECT DE EORTH V1.0
REHSIKENKYU Joel Rees
PERIODICAL TABLE OF THE ELEMENTS


DRILLMASTER Johnny Williams
ALTERNATE 32 COLUMN SCREENS
RICKMAC Richard McNabb
ASCII LINE NUMBERER Richard McNabb
RICKMAC Richard McNabb
SPLIT MULTIPLE ECB'S
RICKMAC Richard McNabb
EILE EXTENSION CHANGER
RICKMAC Richard McNabb
32-COLUMN LISTER
RICKMAC Richard McNabb
BACKUP CHECKER Richard McNabb
RICKMAC Richard McNabb
BOOK UTILITY Richard McNabb
RICKMAC Richard McNabb
BASE CONVERSION CHART
RICKMAC Richard McNabb
CALC. BAS
BNEWHART Robert Newhart
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Games
HORSERACE.BAS Robert Newhart
BNFWHART
DREGON.BAS Robert Newhart
BNEWHART
TALKING STOCK MARKET
SANNUCCI Joe Sannucci

Classic Graphics
KIDS.MAX D8CE
6147 Jerry Campbell

Corrections



Ultralace: Update and Upgrade (May 1992, Page 20): We got a little overzealous when editing the article and (unfortunately) changed the case of a case-sensitive word. The text in Column 3 on Page 20 indicates you should use *Private Times* as the example title. If you do, you'll find the subsequent text won't make any sense. The title of the example publication must be *PRIVATE TIMES*. We apologize for any confusion this may have caused.

Window Master Desk Accessory Pak (Review, June 1992, Page 13): The telephone number for Cer-Comp LTD. is incorrectly listed at the end of the review. The correct number is (702) 452-0632.

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Feature Program

Fast Backups with 128K

Early on, CoCo users saw 4K just wouldn't be enough for what they wanted to do. Then technology evolved, the market grew, and now many of us have CoCo 3's that can be taken to 512K and beyond. And there are many programs designed for CoCos with this much memory. But what about those whose CoCo 3's are still at 128K (after all, the upgrade is still pretty costly)?

Sure, the manual says the CoCo 3 comes with 128K. But as most who have looked have found out, you can still use only a fourth of this for BASIC unless you use a third-party package that opens up the extra memory. I believe we should use the extra memory in the 128K machine to make life a little easier. So I wrote *Backup*, a single-disk backup program.

Backup is very different than Disk BASIC's BACKUP command simply because it is designed to use all of the 128K. The result is that you'll have to swap disks only three times (for 35 tracks) as opposed to the seven or more swaps required by Disk BASIC's BACKUP. In addition, *Backup* can be used to back up 35-, 40- and 80-track disks, and you get to watch as the tracks and sectors are copied. Best of all, *Backup* is written in machine language for pure speed.

To create the machine-language version of *Backup*, first enter the BASIC program listing presented here and save it to disk. While the program does check to make sure the data values you enter (there are a lot of them) are correct, you'll save time and trouble if you are careful when entering the data. Once you have a good working copy, run the program and it automatically cre-

ates the machine-language program and saves it to disk.

To use *Backup*, first make sure your CoCo 3 is set to a 32-column screen width (the program uses the 40- and 80-column screen memory for storage.) If you forget, *Backup* will remind you. Then enter

```
LOADM"BACKUP":EXEC
```

to execute the program. *Backup* defaults to 35-track format; to change the number of tracks you want copied, replace EXEC above with

```
EXEC 3584,xx
```

where xx is the number of tracks. Just remember you'll have to make more swaps with the larger number of tracks.

Backup has been of great value to me, and I'm sure you'll find it to be of great help to you, too. This program actually makes backing up a disk fun to watch! (Hard to believe, isn't it?) Perhaps the only drawback is that now you have no more excuses for not making those backups you should be making.

Joel Mathew Hegberg has been programming for nine years and enjoys writing software for the Color Computer and MMII. Some of his commercial creations are available through Sub-Etha Software. Joel may be contacted at 936 N. 12th Street, DeKalb, IL 60115-2516, (815) 748-6638. Please include an SASE when requesting a reply.

Product Review

War Monger: The CoCo Battlefield

War Monger is an exciting, disk-based CoCo 3 game that allows you to create two armies and have them fight against each other. The computer can control one, both or neither army, so you can play against friends if you like. The armies are placed on a realistic battlefield map. You can design your own terrain or use one of several pre-designed terrains supplied on the disk. Each of the armies is made up of one to 60 units; each of these units has its own unique characteristics such as strength, firepower, range and mobility.

War Monger is menu-driven and provides various options that you use to set up the game. You can define the various attributes for the armies, name weapons, and select color palettes as well as various terrain graphics. The terrain graphics are needed in order to create the map of the battlefield.

These various editing functions allow the user to design fighting units with all sorts of military hardware including ships, tanks, artillery, submarines, and

planes. Even a fleet of spaceships can be selected for more futuristic battles. An option for men with or without armor and horses lets you step back in time to experience ancient warfare. An append function is provided which allows you to combine features from different games. You can carry this to the extreme, if you like, and have King Arthur's knights fighting men in space ships armed with laser cannons.

Six sample wars are included on the disk I mentioned earlier. One of these, *Flags*, is a game that kids might enjoy playing: The weapons are water balloons. Another game, *Pacific*, is set during the period of World War II and pits the Japanese against the allies.

Understanding the various features of *War Monger* requires reading of the 31-page instruction booklet. This is a complicated game with thousands of variations. Although the game is fun to play and contains excellent graphics and colors, you must understand what you are doing. Simply put, *War Monger* is not an arcade shoot-em-up but a real challenge of your warring skill.

War Monger requires a CoCo 3 and either an RGB (recommended) or composite monitor, and a disk drive. (Sundog Systems, P.O. Box 766, Manassas, VA 22111, 703-330-8989; \$29.95 plus \$2.50 S/H).

— Robert Gray

CoCo 3

The Listing: BACKUP

```
1 '128K COCD 3 BACKUP
2 'BY JOEL MATHEW HEGBERG
3 'COPYRIGHT (C) 1992
4 'BY FALSOFT, INC.
5 'RAINBOW MAGAZINE
120 'CREATED FOR "THE RAINBOW"
130 'ON APRIL 28, 1989 BY
140 'JOEL MATHEW HEGBERG
150 '936 NORTH TWELFTH STREET
160 'DE KALB, ILLINOIS 60115
170 '
180 PMODE0,1:PCLEAR4:PMODE4,1:PC
LS
190 CLS:PRINT"PLEASE WAIT..."
200 LC=3584:LT=0:TL=0:RN=340
210 READ A$:IF A$="***"THEN250
220 1FLEN(A$)-3THEN320
230 VL=VAL("&H"+A$):POKELC,VL:LC
-LC+1:LT=LT+VL:TL=TL+VL
240 GOTO210
250 READ TT:IF TT<TL THEN PRINT"
ERROR IN DATA STATEMENTS.":PRINT
"***I CAN'T FIND THE ERROR!***":
END
260 PRINT"SAVING FILE..."
270 SAVEH"BACKUP.BIN",3584,4525,
3584
280 PRINT"*JOB COMPLETE*":PRINT
290 PRINT"TO RUN, TYPE:"
300 PRINT"LOADM ":CHR$(34):"BACK
UP":CHR$(34):PRINT"EXEC":PRINT
310 END
320 VL=VAL("&H"+A$):1FLT<>VL THE
N PRINT"DATA ERROR IN LINE #":RN
:END
330 LT=0:RN=RN+10:GOTO210
340 DATA 16,3,5F,23,FF,FF,FF,FF,
FF,FF,FF,FF,FF,FF,FF,FF,E8
D
350 DATA 49,4E,53,45,52,54,20,53
,4F,55,52,43,45,20,44,49,53,48,5
11
360 DATA 45,54,54,45,20,26,20,50
,52,45,53,53,0,50,45,4E,54,45,48
9
370 DATA 52,50,2E,D,0,49,4E,53,4
5,52,54,20,44,45,53,54,49,4E,41,
4E7
380 DATA 54,49,4F,4E,20,44,49,53
,48,45,54,54,45,20,26,0,50,52,4A
C
390 DATA 45,53,53,20,50,45,4E,54
,45,52,5D,2E,D,0,42,41,44,20,53,
48E
400 DATA 4F,55,52,43,45,20,44,49
,53,48,45,54,54,45,2E,D,0,42,41,
489
410 DATA 44,20,44,45,53,54,49,4E
,41,54,49,4F,4E,20,44,49,53,48,4
F1
420 DATA 45,54,54,45,2E,D,0,54,5
2,41,43,48,3A,0,53,45,43,54,4F,4
9A
430 DATA 52,3A,B,54,48,49,53,20,
50,52,4F,47,52,41,4D,20,43,41,4A
0
440 DATA 4E,4E,4F,54,20,42,45,20
,45,58,45,43,55,54,45,44,D,4F,48
9
450 DATA 4E,20,41,20,34,30,2F,38
,30,20,43,4F,4C,55,40,4E,20,53,4
2B
460 DATA 43,52,45,45,4E,2E,D,0,4
E,55,40,42,45,52,20,4F,46,20,446
470 DATA 54,52,41,43,48,53,3A,0,
2A,2A,42,52,45,41,48,2A,2A,D,41C
480 DATA 0,A6,80,10,27,0,7,AD,9F
,A0,2,16,FF,F3,39,AD,9F,A0,0,77F
490 DATA 7F,FF,40,CC,0,0,DD,8D,0
,D,A9,56,86,96,97,8C,CC,0,4,DD,99
C
500 DATA 8D,34,30,8D,A9,56,35,30
,AD,9F,A0,0,81,3,10,27,2,63,81,6
9F
510 DATA D,10,26,FF,F0,39,CC,0,0
,FD,E,4,FD,E,6,FD,E,8,96,E7,10,7
F7
```





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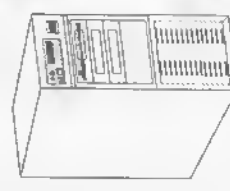
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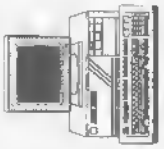
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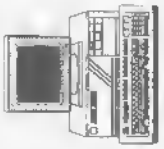
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Repeats continued from Page 1

peared in Dale Puckett's "KISSable OS-9" several years ago, functioned quite well but contained the seeds of disaster. Not too long ago I decided to delete all the files in a directory, so I entered

```
d ! rep del $
```

All files in the directory were dutifully deleted. The only problem was that I had previously set my current data directory to the wrong directory. To prevent this from happening again, I rewrote Rep so it dis-

plays each command being executed — now you're not blind to what's happening. The following example shows how Rep's output might look:

```
OS9: d ! rep del $
del file1
del file2
. . .
del lastfile
```

For even greater protection, Rep accepts an -ok option. If you enter -ok after rep (and just before the command name), the program pauses and requests your permis-

sion to execute the command for each parameter it receives. It looks something like this:

```
OS9: d ! rep -ok del $
del file1? (y/n): y
del file2? (y/n): n
. . .
del lastfile? (y/n): y
```

To get Rep up and running on your system, enter and assemble the source code shown in Listing 1. If you do not have an assembler, use MakeRep, the BASIC90 program shown in Listing 2. MakeRep gener-

ates the executable rep program and saves it in the CM05 directory. (OS-9 Level 1 users need to change all references to /dd to the drive where their CM05 directories are located. This is usually /d0.)

Rep can be a real finger saver when you have the need to repeatedly execute a command. I hope you'll find it useful.

Stephen Goldberg is a dentist and the author of the Utilipak series of OS-9 utilities. He can be contacted at 695 Plainview Road, Bethpage, NY 11714. Please include an SASE when requesting a reply.

CoCo 3

Listing 1: Rep.asm

```
*****
* REP - COPYRIGHT (c) 1989 by S.B.GOLDBERG
*
* Repeatable execution of OS-9 commands taking
* parameter variables from the standard input.
*
    lfpl          /dd/dfs/as9dfs
    usa          ende
*
    mad          lan,name,prgrm+objct,rcant+1,entry,dsiz
*
    params       rmb 200          command parameters
    keypath      rmb 1           keyboard input path
    emdname      rmb 2           command name pointer
    pramaddr     rmb 2           address of parameters
    headaddr     rmb 2           modula header address
    buffer       rmb 100         input buffer
                rmb 200         stack
                rmb 200         Rep parameters
    dsiz         equ .
*
    nama        fes /Rap/
                feb 3           editon number
                fee /(e)1989 S.B.GolDbarg/
*
    eant        fee /**** Can't find command: /
    missing     feb $07
    eantlen     equ *-eant
                fcc /**** Missing /
    er          feb 10d
    term        fes /"term"/
*****
= ERROR MESSAGES
*****
    nodollar    laax cmissing,per    missing "$" message
                elrb                clear error flag
    cantfind    bra errant           message to screen and quit
                laax ccont,per       can't find command message
                ldy #eantlen         message length
                lbr wrta             message to screen
    namaloop    ldx emdname          command name pointer
                lda ,x+             command name character
                empa #s20           and of name?
                bnl namaloop        no, look some more
                lda #s0d            yes, carriage return
                sta ,x              to end of name
                ldx emdname          command name pointer
    errant      ldy #100            maximum length
                lbr wrta           to screen
                qnit lbra errar      quit Rep
*****
+ LINK OR LOAD COMMAND MODULE
*****
    entry       pshs x              save parameter pointer
                elr keypath        clear keyboard input path
    dolarehk    ldr ,x+            parameter character
                empa #s0d          and of parameters?
                bag nodollar       yes, message and quit
                empa #s            dollar sign?
                bne dalarehk       no, look some more
                puls x             parameter pointer
                lda ,x+           first parameter character
                empa #'-          option?
                bna link           no, get command
                ldd ,x++          next parameter characters
                ara #s20         make path lower case
                orb #s20
                empd #s6f6b      is it ak?
                baq apenpath      yes, continue
                laax -3,x         no, reset parameter pointer
    openpath    pshs x              save parameter pointer
                laax cterm,per     terminal device name
                lda #raad         read mode
                os9 lsopen        open path from keyboard
                bes quit          exit with error
                sta keypath       save keyboard path number
                ldy #raad         retrieve parameter pointer
    findemd     lda ,x+            parameter character
                empa #s20        command name?
                bag findemd       no, look again
                laax -1,x         point to command name
                stx emdname       save command name address
                elra              any type or language
                pshs u            save data pointer
                as9 #s1lnk        link to modula
                bec saveaddr      no error, continue
                empb #s21        can't find in memory?
                bna quit         quit with other error
                as9 #sload       else try to load module
                bes eantfind     prompt and quit on error
                stn headaddr     save modula header address
                stx pramaddr     save command parameter address
```

```
                puls u            retrieve data pointer
*****
+ CREATE COMMAND PARAMETERS
*****
    gatvar      elra              standard input path
                ldy #100         maximum variable length
                leax bnfrr,n      variable bnfrr
                os9 l$raadin      read variable
                bes qnit         branch an error
                empy #1          <ENTER?
                lbaq noarr        yes, terminate Rep
                lfr u,x           command parameter buffer
                ldy pramaddr     command line parameters
    maveleap    lda ,y+          get parameter character
                empa #s         dollar sign?
                beq mavevar      yes, move variable to bnfrr
                sta ,x+          na, character to parameter buffer
                empa #s0d        end of parameters?
                baq display      yes, display and execute command
                bra maveleap     no, move next character
*
    mavevar    pshs y            save parameter pointer
                leax bnfrr,n     variable bnfrr
                varleap          get variable characters
                ldd ,y+          move one to parameter bnfrr
                sta #s0d        end of variable?
                empb varloop     no, move another character
                puls y           retrieve parameter pointer
                bra maveleap     back to parameter move
*****
+ DISPLAY AND EXECUTE COMMAND
*****
    errball    bsr r$ingball      sound terminal ball
    display    ldx emdname        command name pointer
                emdloop          character to screen
                ldy #s           check character
                empa #s10        end of command name?
                bhl emdloop      na, print next character
                tfr u,x           command parameters
    pramleap   bsr wrta           parameter character to screen
                ldd ,x+          parameter characters
                empb #s0d        end of parameters?
                bna pramleap     no, display next character
                tst keypath      want pause and prompt?
                bna daprompt     yes, do it
                laax er,per       no, earrlaga ratrrn
                bsr wrta         ga to next line
                bra fark         execute command
*
    r$ingball  laax cmissing,per   error ball
                wrtaone ldy #1     one character
                wrta ldy #1       standard output path
                os9 l$writln      write to screen
                bes passarr       exit with error
                rts              return
*
    doprompt   laax cok,per        permission prompt
                ldy #s1ln         length of prompt
                bsr wrta         prompt to screen
                lda keypath       keyboard input path
                leax bnfrr,u      key input bnfrr
                ldy #1           one character
                os9 l$raad        get answer to prompt
                bes nllnk         exit with error
                laax er,per       earrlaga return
                bsr wrta         ga to next line
                lda buffer        keyboard input character
                empa #s20        make lower case
                ldy #n           is it "n"?
                beg nawvar        yes, just get next variable
                empa #y          is it "y"?
                bne errball       na, error ball and reprompt
                ldd #s0001        type/lang. default data size
                ldx emdname       command name pointer
                ldy #200         maximum parameter size
                os9 #sfark        execute the command
                bes nllnk         exit with error
                os9 #swait        wait for command to finish
                lbaq nawvar       no, get next variable input
                bsr r$ingball     yes, sound terminal ball
                empb #2          <BREAK?
                baq nllnk        yes, quit
                as9 #sperr        print error number
                newvar lbra gatvar get next variable
*****
+ CHECK ERROR AND EXIT REP
*****
    error      empb #s0aaf        end of the input file?
                bne unllnk       no, exit with error
                elrb             yes, clear error flag
                nllnk ldn headaddr get module header address
                os9 #s$unllnk    unllnk command modula
                aut as9 fl$xt     quit Rep
```

```

ok fcc "2 (y/n): "
ok len equ "--ok"
A
len emod
equ *
end
    
```

Listing 2: MakeRep.b09

```

PROCEDURE MakeRep
0000 (* Generates the binary module rep *)
0025 (* Level 1 - change all /dd to /d08 *)
0044 DIM path,byt:BYTE
0055 DIM count:INTEGER
005C PRINT "Creating rep . . .":
0073 CREATE $path,"/dd/emds/rep":WRITE
008A FOR count=1 TO 416
009F READ byt
00A0 PUT $path,byt
00AA NEXT count
00B5 CLOSE $path
00B8 PRINT
00BD SHELL "attr /dd/emds/rep e pe"
00D7 END
00D9 DATA 135,205,1,160,0,13,17,129,137,0,123,2,195,82,101,240
0100 DATA 3,40,99,41,49,57,56,57,32,83,46,66,46,71,111,108,100
0144 DATA 98,101,114,103,42,49,42,42,32,67,97,110,39,116,32,102
0178 DATA 105,110,100,39,99,111,109,109,97,110,100,58,32,7,42
01A9 DATA 42,42,42,32,77,105,115,116,105,110,103,32,36,13,47
01DA DATA 116,101,114,237,46,140,232,95,32,24,48,140,201,116,142
0208 DATA 0,26,23,0,210,150,201,166,128,129,32,34,250,134,13
023C DATA 167,130,158,201,16,142,0,100,23,0,189,22,1,12,52,16
0270 DATA 15,200,166,128,129,13,39,206,129,36,30,246,53,16,166
02A1 DATA 128,129,45,38,36,236,129,138,39,202,39,16,131,111,107
02D2 DATA 39,2,48,29,52,16,48,140,170,136,1,16,63,132,37,205
0306 DATA 151,200,53,16,166,128,129,32,39,250,48,31,159,201,79
0337 DATA 52,64,16,63,0,36,9,193,221,38,179,16,63,1,37,143,223
036E DATA 285,159,203,59,64,79,16,142,0,100,48,201,0,207,16,63
03A2 DATA 139,37,154,16,140,0,1,16,39,0,165,31,49,16,158,203
03D6 DATA 166,160,129,36,39,0,167,128,129,13,38,22,39,242,52
0407 DATA 32,49,201,0,207,236,160,167,128,193,13,38,248,53,32
0430 DATA 32,224,141,32,158,201,141,32,166,128,129,32,34,248
0466 DATA 31,49,141,26,236,128,193,13,38,248,13,200,38,74,48
0497 DATA 141,255,36,141,10,32,58,48,141,255,13,16,142,0,1,134
04C8 DATA 1,16,63,140,37,23,57,40,140,64,16,142,0,9,141,239,150
0502 DATA 200,48,201,0,207,16,142,0,1,16,63,137,37,55,40,141
0536 DATA 254,244,141,218,150,207,130,32,129,118,39,33,129,121
0564 DATA 38,164,204,8,1,158,201,16,142,0,200,16,63,3,37,23,16
0598 DATA 63,4,93,39,3,141,176,193,2,39,11,16,63,15,22,255,73
05D2 DATA 193,211,38,1,95,222,205,16,63,2,16,63,6,63,32,40,121
0609 DATA 47,118,41,58,32,231,75,212
    
```

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Feature Program

Open the Drawer On Inventory

The term *inventory* often brings to mind images of stock clerks running from shelf to shelf, perhaps with those fancy calculators strapped to their legs, counting every product in sight. But not all inventories are so complex (nor so simple). For small-business and personal use (valuable items in the home, collectibles, etc.), such a major production is out of place. This is one of the reasons I wrote the *Electronic File Cabinet (EFC)*.

```
6030 OPEN "1",#-1,NS
6050 IF EOF(-1) THEN 6000
6060 IF Y<4 THEN INPUT#-1,A$(X,Y)
) ELSE INPUT#-1,A$(X,Y)
7630 OPEN "0",#-1,NS
7650 IF Y<4 THEN PRINT#-1,A$(X,Y)
) ELSE PRINT#-1,A$(X,Y)
```

Figure 1: Cassette Modifications

EFC works on any CoCo with at least 16K and Extended BASIC. The program supports a disk drive or cassette (after a few minor modifications, described below), and use of a printer is optional.

Before using *EFC*, it is important that you understand a few terms and how they relate to one another. In *EFC*'s parlance, a *record* is equivalent to a drawer in a file cabinet, and a *file* is the same as a folder in that drawer. (These are different definitions than those used by some other data-management systems.) The description, serial number, model number, etc. are the items (called *fields*) that go in the folder. Given this approach, a disk is viewed as the whole cabinet, which holds many drawers (records), each with a unique Disk BASIC filename.

When you run *EFC*, you'll see a prompt asking if you want to view/update an old record or create a new one. An "old" record is one that is already saved on disk. If you are running *EFC* for the first time, you'll have to create a new record, so press N, then enter an eight-character (max) legal filename for the record when prompted. You'll then be asked to enter the various fields for each file in the record. Press ENTER by itself to exit the file-entry routine.

After an old record has been loaded from disk (or tape) or a new one entered from the keyboard, it can be viewed, updated or printed. A menu of options appears on the bottom half of the screen. You can Edit, Delete or Add a file; Print, Save or Load a complete record; or Exit the program.

You can scroll through the files in memory using the up and down arrow; the up arrow key takes you to the previous file, and the down arrow moves you to the next file in the record.

To enter the Edit mode, press E. An arrow appears on the top half of the screen, allowing you to select the field you want to edit. When the arrow is pointing to the appropriate field, press ENTER and enter the new information. To exit the Edit mode, press the space bar.

To add a file to the end of the record, press A, or to delete the file currently displayed, press D. To print all the files in the record, press P.

Modifications

As written, *EFC* saves and loads data using sequential-access disk files. To convert the program for use with a cassette-based system, make the modifications outlined in Figure 1.

Shop Talk

Electronic File Cabinet is a basic inventory program — most RAINBOW readers have seen them before. What really sets *EFC* apart from most other inventory programs are its methods of operation and upside-down structure.

The most commonly used approach to getting input into a BASIC program is with the INPUT command. INPUT waits for the user to type a string of characters and press ENTER. But if the user enters data that doesn't meet certain standards, the computer forces him to try again. For example, if a user enters a name of fifteen characters at a program prompt that expects a string of only ten characters, he would have to retype the entry — a real pain for hunt-and-peck typists.

EFC doesn't contain a single INPUT statement. Instead, the program uses a subroutine I call the Limited Inputter to receive data from the keyboard.

This subroutine uses the INKEY\$ command to scan the keyboard. When a key is pressed, its "value" is added to the total of characters

Data Variables	
NS	Record name
AS(1,1)	Description of File #1
AS(1,2)	Serial No. of File #1
AS(1,3)	Model No. of File #1
AS(1,4)	Amount owned of File #1
AS(1,5)	Value of File #1
AS(2,1)	Description of File #2
etc.	
Limited Inputter Variables	
C, B	Location of input
TS	Total input
NS	Letter printed on screen
IS	INKEY\$ variable
A	Print location of prompt
Z	Maximum length of input
Edit-Routine Variables	
L	Print location
P	Keeps track of location and of what to edit
PS	Arrow
INS	INKEY\$ variable

Figure 2: Variable Dictionary

this subroutine for all its input. To see what function each variable performs, refer to the variable dictionary in Figure 2.

To use this subroutine in your own program, print the input prompt at a specified location using a PRINT# command. Then assign that print location to Variable A, and the maximum input length to Variable Z. Finally, have the program jump to the Limited Inputter subroutine. For example,

```
PRINT#20, "WHAT IS YOUR NAME?":A=17;Z=15;GOSUB 1000;NAME$=TS,
```

first prints the prompt WHAT IS YOUR NAME? at Screen Location 20. After assigning variables A and Z, control is transferred to Line 1000 (the location of the subroutine). The subroutine moves the print location 15 spaces to the right (Line 1030) and prints 15 periods (Line 1040) designating how much room the user has for input. After ENTER is pressed, the program returns to the point directly after the GOSUB command, where it assigns the variable NAME\$ to whatever the user entered.

As far as program structure is concerned, *EFC* is "upside down." That is, the beginning of the program is at the bottom, and the most-used subroutines are at the top. This speeds up program operation since the computer starts searching for a subroutine at the top and works down. Putting the less-frequently used program parts at the bottom requires the computer to do far less searching.

Daniel Doner wrote EFC as a junior in high school—he is now a graduate student in mechanical engineering at Colorado State and is studying artificial intelligence. He is married and enjoys reading and flying. He may be contacted at 818 Foxtail Street, Fort Collins, CO 80524, (303) 490-1613. Please include an SASE when requesting a reply.

already pressed. If the left (back) arrow is pressed, the last key pressed is subtracted. If you enter more characters than allowed for, the program simply ignores you and waits for you to press ENTER. *EFC* uses

```
16K Disk
The Listing: ECABINET
1 *ELECTRONIC CABINET
2 *BY DANIEL D. DONER
3 *COPYRIGHT (C) 1992
4 *BY FALSOFF, INC.
5 *RAINBOW MAGAZINE
10 GOTO 10440
1000 '
1010 ' LIMITED INPUTTER
1020 '
1030 C=15+A:TS="":B=C
1040 PRINT#C,STRING$(Z," ")
1050 PRINT#B,"":
1060 IS=INKEY$:IF IS="" THEN 1060
1065 IF ASC(IS)=0 AND 0<C THEN P
PRINT#B-1,"*":B=B-1:TS=LEFT$(TS,
LEN(TS)-1):GOTO 1050 ELSE IF ASC
(IS)=21 THEN B=C:TS="":GOTO 1040
ELSE IF ASC(IS)=13 THEN RETURN
1070 IF B=C+2 THEN 1060
1080 NS="*":TS=TS+IS
1090 NS=NS+IS:PRINT#B,NS:IF 0<<
+Z THEN B=0+1
1100 GOTO 1050
2000 '
2010 ' PRINT DATA
2020 '
2030 Y=1
2040 CLS
2050 PRINT#5,"RECORD NAME: ";NS:
PRINT#20,"#":1;
2060 PRINT#32,STRING$(32,131);
2070 PRINT#67,"DESCRIPTION: ";P
RIN1067+13,AS(1,Y):Y=Y+1
2080 PRINT#99,"SERIAL NO.1 *::PR
INT#99+13,AS(1,Y):Y=Y+1
2090 PRINT#131,"MODEL: *::PRIN#
131+13,AS(1,Y):Y=Y+1
2100 PRINT#163,"NO. OWNED: *::PR
INT#163+12,A(1,Y):Y=Y+1
2110 PRINT#195,"VAL OF EACH: *::
PRINT#195+12,A(1,Y):Y=Y+1
2120 PRINT#224,STRING$(32,131);
2130 PRINT#260,"TOTAL VALUE: *::
PRINT USING"$$$###.##":A(1,4)*
A(1,5)
2140 PRINT#323,"<E> - EDIT <S
> - SAVE"
2150 PRINT#355,"<L> - LOAD <O
> - DELETE"
2160 PRINT#387,"<A> - ADD <X
> - EXIT"
2165 PRINT#419,"<P> - PRINT"
2170 '
2180 ' FILE SELECT
2190 '
2200 INS=INKEY$:IF INS="" THEN 2
200 ELSE IN=ASC(IN$)
2210 IF IN=94 AND 1>=2 THEN 1=1;
GOTO 2000 ELSE IF IN=10 AND 1<
X THEN 1=1+1;GOTO 2000 ELSE IF 1
N=69 THEN GOSUB 4000;GOTO 2000 E
LSE IF IN=65 THEN GOSUB 10250;GO
10 2000 ELSE IF IN=88 THEN GOSUB
10140;GOTO 2000
2220 IF IN=83 THEN GOSUB 7000;GO
TO 2000 ELSE IF IN=75 THEN GOSUB
6000 ELSE IF IN=60 THEN GOSUB 1
0000;GOTO 2000 ELSE IF IN=80 THE
N GOSUB 8000;GOTO 2000 ELSE 2200
4000 '
4010 '
4020 ' EDIT ROUTINE
4030 '
4040 L=64:P=1
4050 PRINT#L,PS;
4054 PRINT#429,"EDIT *::
4055 PRINT#450,"USE UP-OWN ARRO
WS TO SELECT"
4056 PRINT#489,"<SPACE> TO EXIT"
```



```

:
4060 IN$=INKEY$:IF IN$="" THEN 4
060 ELSE IN=ASC(IN$)
4070 IF IN=94 AND P>1 THEN L=L-3
2:P=P-1 ELSE IF IN=10 AND P<=4 T
HEN L=L+32:P=P+T ELSE IF IN=32 T
HEN RETURN ELSE IF IN=13 THEN 4T
0 ELSE 4060
4080 IF L>64 THEN PRINT@L+32,"
"
4090 IF L<192 THEN PRINT@L+32,"
"
4100 GOTO 4050
4110 IF P=1 THEN A=65 ELSE IF P=
2 THEN A=97 ELSE IF P=3 THEN A=1
29 ELSE IF P=4 THEN A=161 ELSE I
F P=5 THEN A=193
4120 IF P<4 THEN Z=15 ELSE IF P>
4 THEN Z=6 ELSE Z=4
4130 GOSUB 1000
4140 A$(1,P)=T$:IF P=1 AND A$(1,
P)="" THEN 4120 ELSE IF P>3 THEN
A(1,P)=VAL(A$(1,P)):IF P=4 AND
A(1,P)<1 OR P=5 AND A(1,P)<.01 T
HEN 4120 ELSE A(1,6)=A(1,5)+A(1,
4)
4150 RETURN
5910 "
5920 " LOAD DATA FROM DISK
5930 "
6000 CLS
6010 PRINT@96,"RECORD NAME TO LD
AD: ";Z-B;A-102;GOSUB 1000
6020 N$=T$:IF VAL(LEFT$(N$,1))>0
OR N$="" THEN 6010
6030 OPEN "I",#T,N$
6040 FOR X=T TO S1:FOR Y=I TO 5
6050 IF EOF(1) THEN 6080
6060 IF Y<4 THEN INPUT#1,A$(X,Y)
ELSE INPUT#1,A(X,Y)
6070 NEXT Y,X
6080 CLOSE
6090 I=L:X=S-1;GOTO 2000
7000 "
7010 " SAVE DATA- NAME CHECK
7020 "
7040 PRINT@448,"IS ""N$;" CORR
ECT NAME?";PRINT@480,"(Y/N) ";
7050 IN$=INKEY$:IF IN$="" THEN 7
050
7060 IF IN$="N" GOSUB 7500 ELSE
IF IN$="Y" GOSUB 7600:RETURN EL
E IF IN$<>"Y" THEN 7050
7070 GOTO 7040
7500 PRINT@448,STRING$(45,32);P
RINT@448,"CORRECT NAME: ";Z-B;A
-451;GOSUB 1000
7510 N$=T$:IF N$="" OR VAL(LEFT$
(N$,1))>0 THEN 7500 ELSE RETURN
7590 "
7600 " SAVE
7610 "
7620 PRINT@448,STRING$(40,32);P
RINT@461,"SAVING"
7630 OPEN "O",#I,N$
7640 FOR F=1 TO X:FOR Y=1 TO S
7650 IF Y<4 THEN PRINT#1,A$(F,Y)
ELSE PRINT#1,A(F,Y)
7660 NEXT Y,F
7670 CLOSE:RETURN
8000 "
8010 " PRINT ON PAPER
8020 "
8030 PRINT@457,"PRINT: SURE ?"
8040 IN$=INKEY$:IF IN$="" THEN 8
040
8050 IF IN$="N" THEN RETURN ELSE
IF IN$<>"Y" THEN 8040
8060 PRINT@449,"ALIGN PAPER-> P
RESS <ENTER>";LINE INPUT IN$
8070 PRINT# 2:PRINT# 2:PRINT# 2,
"RECORD: ";N$
8080 PRINT# 2,"DESCRIPTION";TAB(
23)"SERIAL#";TAB(38)"MODEL";TAB(
51)"NO. ";TAB(60)"VALUE";TAB(68)"
TOTAL VALUE"
8085 PRINT# 2,STRING$(79," ")
8090 FOR I=T TO X
8100 PRINT# 2, A$(I,1);TAB(7) A
$(I,2);TAB(35) A$(I,3);TAB(52) A
$(I,4);PRINT# 2, TAB(59);PRIN
T# 2,USING"$$$###,##";A(I,5);PRIN
T# 2,TAB(68);PRINT# 2,USING"$$$
###,##";A(I,4)*A(I,5)
8110 NEXT I
8120 RETURN
    
```



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```

10000 ' RETURN
10010 ' DELETE DATA 10290 PRINT@6,STRINGS(21,32)
10020 ' Y=Y+1
10030 PRINT@457,"DELETE (Y/N)?" 10300 Y=Y+1
10040 INS=INKEY$:IF INS="" THEN 10310 PRINT@96,"SERIAL NO.: ";A
10040 ' -96;Z=15;GOSUB 1000:AS(X,Y)=TS
10050 ' 10320 Y=Y+1
10050 ' 1E INS="N" OR X<1 THEN RET 10330 PRINT@120,"MODE1: ";:A=120
URN EESE IF INS<>"Y" THEN 10040 :Z=15;GOSUB 1000:AS(X,Y)=TS
10060 ' EOR C=1 TO X:EOR Y=1 TO 5 10340 Y=Y+1
10070 ' AS(C,Y)=AS(C+1,Y):A(C,Y)=A 10350 PRINT@160,"NO. OWNED: ";A
(C+1,Y) -160;Z=4;GOSUB 1000:A(X,Y)=VAE(T
10080 ' NEX1 Y,C $):IF A(X,Y)<1 THEN 10350
10090 ' X=X-1:IF I>1 THEN 1-1 10360 Y=Y+1
10100 ' RETURN 10370 PRINT@192,"VALUE OF EACH:
10110 ' " :A=192;Z=6;GOSUB 1000:A(X,Y)=V
10120 ' END AL(T$):IE A(X,Y)<.01 THEN 10370
10130 ' 10380 A(X,Y+1)=A(X,Y)*A(X,Y-1)
10140 ' CLS:PRINT@237,"STOP!" 10390 GOTO 10250
10150 ' PRINT@293,"ARE YOU SURE YO 10400 '
U WANT" 10410 ' INTRODUCTION
10160 ' PRINT@326,"TO DO THIS ? (Y 10420 '
/N) " 10430 '
10170 ' INS=INKEY$:IF INS="" THEN 10440 ' CLS:CLEAR 1000:DIM A$(50,6
10170 ' ),A(50,6);P$=""->"
10180 ' 1E INS="Y" THEN END EESE I 10450 PRINT@97,STRINGS(29,131):P
F INS="N" THEN 2000 ELSE 10170 RINT@97,CHRS(130);:PRINT@129,CHR
10190 ' END $(130);:PRINT@161,CHRS(130);:PRI
10200 ' NTO@162,STRINGS(28,140);:PRIN@12
10210 ' INPUT DATA 5,CHRS(133);:PRINT@157,CHRS(133)
10220 ' :;PRINT@189,CHRS(133);
10230 ' CLS 10460 PRINT@130,"THE ELECTRONIC
10240 ' PRINT@131,"RECORD NAME: "; FILE CABINET";
:A=131;Z=8;GOSUB 1000:NS=1$:IF N 10470 PRINT@266,"BY DAH D0NER"
S="" OR VAL(LEFT$(NS,1))>0 THEN 10480 PRINT@324,"NEW RECORD OR D
10240 ' LD RECORD":PRINT@364,"(N/0) ?"
10250 ' CLS 10490 INS=INKEY$:IF INS="" THEN
10260 ' X=X+1:Y=1:IE X>50 THEN RET 10490
URN 10500 IF INS="O" THEN GOSUB 6000
10270 ' PRINT@6,"PRESS <ENTER> TO 10510 GOTO 2000 ELSE IE INS="N" THEN
QUIT" GOSUB 10200:GOTO 2000 ELSE 10490
10280 ' PRINT@64,"DESCRIPTION: ";
A=64;Z=15;GOSUB 1000:AS(X,Y)=TS;
IF AS(X,1)="" THEN 1-X-1:X=X-1:R
    
```



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Configuring a new Boot Disk
 I upgraded my CoCo 3 to 512K and added a second disk drive. I also purchased OS-9 and am having great difficulty configuring a working system disk to support the double-sided drives.

I am able to boot OS-9 and run config, and go through the steps to create a new boot disk. When choosing the device descriptors, I select d0_40d, d1_40d and ddd0_40d. After I finish selecting the descriptors, I get the message:

```
Use [CAUTION]: OS9GEN </devname>
[.s] ...
reads (stdin) pathnames until
EOF,
merging paths into new OS9Boot f
ile.
-s= single drive operation
ERROR #215
```

Here everything comes to a screeching halt and I get the OS9: prompt. I have gone through every issue of THE RAINBOW since February 1989 and read everything on OS-9 in those issues. I have The Complete Rainbow Guide to OS-9 Level II and The BASIC09 Tutor Guide.

David Bakker
 Hamilton, Michigan

a If the only modification you want to make is to change the disk descriptors to use 40-track double-sided drives, it may be easier (and faster) to patch the descriptors in memory and use cobbler to save the changes. To do this, boot OS-9

from a backup of your master disk and issue these commands, pressing ENTER after each:

```
modpatch
l dd
c 14 03 00
c 18 23 28
c 19 00 01
v
l d0
c 14 03 00
c 18 23 28
c 19 00 01
v
l d1
c 14 03 00
c 18 23 28
c 19 00 01
v
CTRL-BREAK
```

This modifies the dd, d0 and d1 descriptors for 40-track, double-sided drives stepping at 6 milliseconds. Note that when you enter v to update the module CRC, the cursor stays on the same line — keep typing the remainder of the commands. The last line means to press CTRL and BREAK simultaneously to exit modpatch. After you've made these changes, insert a blank disk in Drive /d1 and issue the command:

```
format /d1 r 2 '40' "OS-9 Boot D
isk"
```

This formats a 40-track double-sided disk with OS-9 Boot Disk as the volume label. After the disk is formatted and you get the OS9: prompt back, enter:

```
cobbler /d1
```

This command stores the OS-9 Kernel on

Track 34 and creates the file 059Boot on the disk in Drive /d1.

The final step is to copy all the files on the old boot disk to the new boot disk. The easiest way to do this is to use dsave. With the old boot disk in Drive /d0 and the new boot disk in Drive /d1, enter:

```
chd /d0
dsave /d0 /d1 ! shell
```

Ordinarily, dsave generates the commands necessary for copying all the files from one disk to another, but does not actually copy the files. For this reason, the output of dsave is piped to the input of shell in the above command line (this is what the exclamation point means), so all the commands generated by dsave are executed immediately. Once this process has finished, you'll have a 40-track, double-sided boot disk — you may also want to copy bas1c09, runb, gfx2, inkey and syscall from the BASIC09 Config disk onto the new boot disk.

In Search of Software

? In the August issue of OS-9 Hotline, you responded to Mr. Pratt's letter with some good information for sources of serious applications. You also mentioned The OS-9 Sourcebook from Microware. I cannot find an address for Microware anywhere. Can you tell me how to get in touch with them? I would like to obtain a copy of this book.

George Ramsower III
 San Antonio, Texas

a You can contact Microware by calling (515) 244-1929 or by writing

Microware Systems Corporation
 1900 Northwest 114th Street
 Des Moines, IA 50322

Obtaining the Cursor Position

? Many times while using BASIC09 I have come across the need to get the current cursor position while in a program. After studying the OS-9 manual and reading many articles, I cannot find a way to do this. Is there a system call or some other way that I can get the current cursor position? Also, is there a way of simulating the HSTAT command in BASIC so I can make a program read what is printed on the screen, aside from directly pecking the screen's address? Any help would be most appreciated.

Aaron Yates
 Riverview, Virginia

a If you are using a VDG graphics screen, you can use the SS.DSTAT get-status call to obtain the position of the graphics cursor, the address of the graphics screen, and the color code of the pixel at the cursor address. For a VDG text screen, you can use the SS.CURSR get-status call to obtain the character code of the character at the current cursor position, and the position of the cursor. Unfortunately, no similar system calls exist to obtain the current cursor position for windows.

The Null Devices

? What are nulldev.dr and null.dd that come with the Development System? I can't find them in the manual and all the help message tells you is that they "... are usually used for redirection."

Michael Wright
 Nacogdoches, Texas

a The /n1 device is what I affectionately refer to as "OS-9's great bit bucket." Any data you send to /p magically appears on the printer, and any data you send to /t term magically appears

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on the screen. The /nll device is much different in that any data sent to /nll goes absolutely nowhere. This is handy for those occasions when you want to run a command but have no desire to see its output on the screen.

1st. When I boot OS-9 to run BASIC09, I insert the BASIC09/Config disk in the drive, type basic09 and get Error #216. I tried again and again but the error routines.

Jose Torres Rivera
Naranjito, Puerto Rico

chd /d0
ehx /d0/cmds
basic09
Unless you change the current data and current execution directories, OS-9 doesn't know where the commands and executable programs are located on that disk.



Swapping Disks
How can I run applications with OS-9? For example, I tried to run Color Computer Artist by Tandy. This program works in a graphics window, but I don't know how. The manual says that it can be copied to the customized OS-9 boot disk and to run artist omv it has been copied to the CMDS directory by typing art.

Any time you insert a new disk in the drive, you need to tell OS-9 where the CMDS directory is located on the new disk and which directory you want to use for data storage and retrieval. For example, to run BASIC09 you would insert the BASIC09/Config disk into Drive t40 and issue these commands:

Have you a burning question regarding some aspect of the OS-9 operating system? Send it to us and we'll do our best to answer it for you. Direct your inquiries to OS-9 Hotline, THE RAINBOW, 9509 U.S. Hwy. 42, P.O. Box 385, Prospect, KY 40059.

More Memory for the CoCo 2?
Can I upgrade my CoCo 2 to 128K using the chips I took out of my CoCo 3 when I upgraded it to 512K?
E. Oelschalger
Pittsburgh, Pennsylvania

No. The ability to increase the memory of any specific computer is dependent not only on the chips available, but also on the memory-management circuitry within the computer. The CoCo 1 and 2 are designed to handle no more than 64K of memory and would require extra circuitry to support more. As an historical note, memory upgrades for up to 256K were at one time available for the CoCo 1 and 2. Very little software was written to support and take advantage of these upgrades, however; and they faded to obscurity with the advent of the CoCo 3.

Printing in Parallel
I have a Blue Chip M10/16LQ printer that has a 36-pin parallel port and a 6-pin Commodore-64 serial port unit. How can I use this with a CoCo 3?
Brandon Broyles
The Cobby, Texas

You cannot use the 6-pin port because the serial format for a Commodore-64 is electrically different from that used by most other computers. You can use the 36-pin parallel port on that printer, but you'll need to buy a serial-to-parallel converter (such as those sold by Dayton Associates and CoCoPRO!).

DC Modem Pak and Downloading
I have a DC Modem Pak and an FD-500 disk drive, but I have no Multi-Pak Interface. I find myself unable to download anything from any online system. What do I need?
Donald G. Mayhew (LUPUS)
Lakewood, Colorado

There are several ways you can proceed to fix the situation. By far the least expensive approach would be to temporarily forget about the DC Modem Pak and purchase a 1200- or 2400-bps external modem. This can then be connected to the 4-pin serial port on the rear of the CoCo, using a special 4-pin DIN to DB-25 cable. The pin-out for this cable is as follows:

Table with 2 columns: CoCu DIN, Modem DB-25. Rows show pin connections: 1-8, 2-3, 3-7, 4-2.

With the hardware in place, get a decent CoCo 3 terminal package. There are several excellent shareware programs (Delphinus, Ultimaterm and Greg-E-Term) that support operation of an external modem at 1200 and 2400 bps with the internal serial port. There are also several fine commercial terminal programs for the CoCo 3 that support 1200- and 2400-bps operation via the bit-banger port. Two of these are VTerm (available from CoCoPRO!) and Dehon Term (available from Cer-Comp). Of course, for printing, you'll need to either switch connectors or buy or make a switch box to go between the printer and the modem. You might be able to trade the unused DC Modem Pak to CoCoPRO! for incr-

Yes! They're still available!

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chandise, or (as another approach to your problem) you can pay them to turn it into an RS-232 pack. Then if you ever get a Multi-Pak Interface, Slot Pak or Y cable, you can use the converted pack with your modem to permit smoother operation and free the serial port for the printer.

On the 63B09E Front
 I've heard about the Hitachi 63B09E (a CMOS version of the 68B09E) not merely emulating the 6809, but actually having considerably more registers and commands. Is this so? Where can I get one?
 Dennis McMillan (COCOKRM)
 Pittsburg, California

A Kevin Darling (DARLING) recently circulated on the CoCo mailing list a document of over a dozen pages written by Hirotsugu Kakugawa of the Graduate School of Engineering of Hiroshima University in Japan. This document (now available on Delphi in the Hardware Hacking database of the CoCo SIG and in the General topic area of the OS-9 SIG) details the "secret" features of the 6309. In summary, in addition to emulating the 6809, the 6309 operates as a low-power CMOS chip and is capable of cycle speeds of 3 MHz or more. The chip has these special properties:

- two 8-bit accumulators, one 8-bit register and one 16-bit register
- two modes of operation: 6809 emulation and native mode
- reduced execution cycles in native mode
- more instructions, including 16-bit-by-16-bit multiplication, 32-bit-by-16-bit division, more inter-register operations, bit

manipulation instructions compatible with the 6801, and block-transfer operations

- error trapping of illegal instructions, including divide by zero

Details of the "secret" features are in large part explained in the document by Hirotsugu. A 63B09E can literally be dropped into a CoCo 3 (provided you've removed the original 68B09E chip and put a socket in its place). No other hardware modifications are needed. I'm told by Brother Jeremy (REVVCP) that you can order 63B09E's in quantity one from Summer Inc. in Illinois (708-991-8500).

Joystick Sticks
 The vertical axis of my right joystick is stuck at a value of 25 when I read the joystick. The horizontal axis works fine, as do both axes of the left joystick. I read a long time ago that an LM3900 chip is used in the CoCo 1 joystick circuit, but I cannot find such a chip in the CoCo 3.

Also, my DMP-110 is behaving oddly. In self-test mode, it prints part of the top of each row of characters at the bottom of the character. Any suggestions?

Roy Wilson
 El Reno, Oklahoma

A First swap the left and right joysticks to see whether the problem follows the joystick, or whether it stays with a given joystick port on the CoCo. If the problem is in the joystick, you have a bad joystick cable or a bad connection inside the joystick. Inside the joysticks are two 10,000-ohm potentiometers mechanically linked to the axes of motion. Look for a defective mechanical linkage. Use a standard ohmmeter to find breaks in the cable, a defective potentiometer or a broken wire

that should be connected to the potentiometer.

If the problem is with the CoCo 3 joystick port, get a schematic for the CoCo 3 (available in the Service Manual for the CoCo 3, which you can order through Radio Shack stores). Carefully check continuity from the joystick connector to IC7 (SC77526). This is a custom chip specific to the CoCo 3. (Tandy "drew" a line around much of the discrete components of the joystick and cassette circuitry of the CoCo 1, and stuffed it all into this one custom chip. If the problem is in a chip, it most likely is in this chip. This chip is available only from Tandy National Parts, if indeed it is still available at all.

As for the printer, I fear it is likely to be unrepairable. Your problem sounds like a defect in the "computer" that lives inside the printer.

Bump Off the 6809
 I accidentally bumped my disk controller when it was plugged into my Slot Pak and my CoCo 3. Now when the computer and that controller are used together, the drive just spins. It does not work. The disk controller appears to work fine when used with my spare CoCo 3. Any suggestions?

Charles Rempel
 Plum Coulee, Manitoba
 Canada

A It sounds like you have damaged the 68B09E chip in your CoCo 3. This often happens when a card is jostled in a Multi-Pak Interface or Slot Pak. The 68B09E chip must be removed. Destructive removal is best: Clip all pins and remove the chip, then use a soldering iron and needle-nose pliers to remove each pin from the circuit board. When finished, clean all

the holes with a solder sucker, install a 40-pin socket, and print a new 68B09E chip in it.

Drive Won't Format Disks
 I have a Tandy FD-501 disk drive that reads and writes files but will not properly format diskettes. What is the problem, and how can I fix it?

Ben Cuiwell
 Marion, Ohio

A This is a problem about which readers frequently write. Disk drives do not use the index pulse signal when reading and writing sectors (files). This signal is used only for writing entire tracks (formatting). Thus, your problem is with the index pulse, either in the drive, the cable or the controller card. On the FD-501 controller, the index signal (Pin 8 of the 34-pin connector) goes straight to the floppy-disk controller chip, although it is pulled high by a resistor. Some Delphi members have reported to me that on their controllers they found a short that was connecting Pin 8 of the 34-pin connector to ground, causing the problem you describe. To locate the problem, you need to use an ohmmeter (and perhaps an oscilloscope) to check the index-pulse circuit down the line. You may also want to swap a known good controller for the suspect one, and the same for your drive and cable (one at a time) to try to determine where the problem is.

Martin H. Goodman, M.D., a physician trained in anesthesiology, is a longtime electronics tinkerer and outspoken commentator — sort of the Howard Cosell of the CoCo world. On Delphi, Marty is the SIGop of the RAINBOW's CoCo SIG. His non-computer passions include running, mountaineering and outdoor photography. Marty lives in San Pablo, California.

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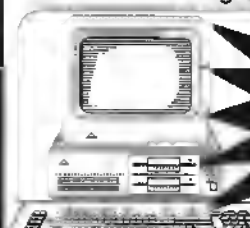
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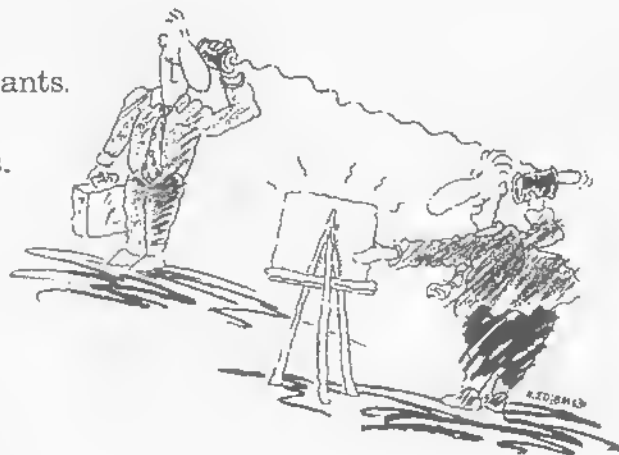
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FILE,";PRINT:POKE65496,0;LOADM P
$(B)+DMS:POKE65344,0;EXEC
595 IFF(B)=1THENHCOLOR0:HPRINT11
5,22),"You cannot execute a data
file!";SOUND2,20;FORI=1TO4:GOSU
B355:NEXTI;GOSUB345;GOSUB555;GOS
UB535;GOTO135
600 IFF(B)=3THENHCOLOR0:HPRINT(1
5,22),"You cannot load a text
editor source file!";SOUND2,20;
FORI=1TO4:GOSUB355:NEXTI;GOSUB34
5;GOSUB555;GOSUB535;GOTO135
605 PRINT"RUNNING: "P$(B)+DMS;GO
SUB975:POKE41598,3;POKE41599,3;R
ETURN
610 **** LOAD A FILENAME
615 TFF(B)=0THENGOSUB485;WIDTH32
:GOSUB870;RGB;GOSUB635;GOSUB555;
CLEAR200;PCLEAR4;GOSUB575:POKE65
496,0;LOAD P$(B)+DMS
620 IFF(B)=2THENGOSUB485;WIDTH32
:GOSUB870;RGB;GOSUB635;GOSUB555;
CLEAR200;PCLEAR4;GOSUB575:POKE65
496,0;LOADM P$(B)+DMS;POKE65344,
0;END
625 IFF(B)=1THENHCOLOR0:HPRINT(1
5,22),"You cannot load a data fi
le!";SOUND2,20;FORI=1TO4:GOSUB35
5:NEXTI;GOSUB345;GOSUB555;GOSUB5
35;GOTO135
630 IFF(B)=3THENHCOLOR0:HPRINT(1
5,22),"You cannot load a text ed
itor source file!";SOUND2,20;FOR
I=1TO4:GOSUB355:NEXTI;GOSUB345;G
OSUB555;GOSUB535;GOTO135
635 PRINT"LOADING: "P$(B)+DMS;GO
SUB975:POKE41598,3;POKE41599,3;R
ETURN
640 **** RENAME A FILE
645 HCOLOR0:HPRINT119,22),"NEW F
ILE NAME: ";HLIN(272,1
84)-(335,184),PSET:HLIN(343,184
)-(366,184),PSET:HPRINT(47,22),"
or hit [ENTER]";POKE1024,34;POKE
1025,22;POKE1026,0;POKE1027,0
650 GOSUB420;IFZ$=""THENHGOSUB345
:GOSUB555;GOSUB535;GOTO135ELSEW$
=Z$
655 HCOLOR0:HPRINT142,22)," ";PO
KE1024,43;POKE1025,22;POKE1026,3
:POKE1027,0
660 GOSUB420;IFZ$=""THENHGOSUB345
:GOSUB555;GOSUB535;GOTO135
665 HCOLOR0:HLIN(1120,184)-(460,
184),PSET:GOSUB485;Y$=W$+STRING$
(8-LEN(W$),32)+" ";Z$=Y$+P$(B)
THENHCOLOR0:HPRINT115,22),"THE N
EW NAME MUST NOT BE THE SAME AS
THE OLD NAME!";POKELO,0;FORT=1TO
3000:NEXI:POKEHI,0;GOSUB555;GOSU
B345;GOTO135
670 POKELO,0;RENAME P$(B)+DMS TO
Y$+DMS;POKE65344,0
675 POKEHI,0;GOSUB345;GOSUB335;G
OSUB245;GOSUB215;GOSUB275;GOTO13
5
680 **** COPY A FILE
685 GOSUB485;HCOLOR0:HPRINT(15,2
2),"What is the target drive? 0,
1,2,3
690 EXEC44539;Z=PEEK(T35);IFZ<48
ORZ>51THEN690ELISE 5$=""+"CHR$(Z
):S=Z-48;DN=PEEK(235);DMS=";"CHR
$(10H+48);GOSUB535;GOSUB345
695 IFPEEK(4T602)<>23THENPOKELO,
0;COPY P$(B)+DMS TO P$(B)+S$;POK
EHI,0;POKE235,0N;POKE65344,0;GOS
UB555;GOSUB715;GOTO135 'CHECK FO
R AD053
700 GOSUB710;GOSUB880;WIDTH80;CL
S6;CMP:PALETTE3,36;LOCATE0,9;ATT
R5,3;PRINTSTRING$(31,32);:ATTR6,
5;LOCATE0,11;ATTR5,2;PRINTSTRING
$(13,32);:ATTR6,5;LOCATE0,10;ATT
R5,3;PRINT " ";:ATTR2,1;PRINT" CO
PYING "P$(B)+DMS" TO"5"";:ATTR5,
2;PRINT" ";
705 ATTR6,5;POKE65420,32;POKE654
29,2;LOCATE0,12;ATTR3,5,B:POKELO
,0;COPY P$(B)+DMS TO P$(B)+S$:PO
KEHI,0;POKE65344,0;POKE235,0N;PO
KE59078,33;CLS;GOSUB880;HSCREEN3
:RGB;POKE59078,147;GOSUB555;GOSU
B715;POKE65420,126;POKE65429,126
:GOTO135
710 POKE57414,9;POKE63105,32;PDK
E63112,38;POKE63113,0;POKE63601,
64;POKE63605,37;POKE63606,192;RE
TURN 'CONVERT BOX24 HIREX TEXT S
CREEN INTO 32X24 HIREX TEXT SCRE
EN (C) APRIL 1989 TIM RITTER
715 POKE57414,21;POKE63105,80;PO
KE63112,47;POKE63113,0;POKE63601
,160;POKE63605,46;POKE63606,96;R
ETURN 'RESET 32X24 HIREX TEXT SC
REEN TO 80X24 HI-RES TEXT SCREEN
720 **** KILL A FILE
725 DN=PEEK(1235);DMS=";"CHR$(148
+DN);GOSUB485;POKELO,0;KILL P$(B
)+DMS;POKEHI,0;POKE65344,0;GOSUB
335;GOSUB245;GOSUB215;GOSUB275;G
OTO135
730 **** SCAN A FILE
735 GOSUB485;GOSUB555;POKEHI,0;G
OSUB890;GOSUB790;WIDTH80;CLS6;CH
P;DMS=";"CHR$(PEEK(235)+48)
740 LOCATE2,0;ATTR7,5;PRINTSTRIN
G$(28,42);LOCATE2,1;PRIHT""";:A
TTR6,5;PRINT"SCANNING: "P$(B)+DMS
";:ATTR7,5;PRIHT""";:LOCATE2,2;PR
INTSTRING$(28,42)
745 LOCATE32,0;ATTR7,5;PRINT5TRI
NG$(30,42);:LOCATE32,T;PRINT""";
:ATTR6,5;PRINT"SPACE=PAUSE = EN
TER=RETURN";:ATTR7,5;PRINT""";:
LOCATE32,2;PRINTSTRING$(30,42);
750 LOCATE16,4;ATTR2,1;PRINT"YEL
LOW=VALUE LESS THAN ASC11 32"";:A
TTR6,5;LOCATE15,5;ATTR3,2;PRINT"
BLUE=VALUE GREATER THAN ASC11 12
7"";:ATTR3,5;PRINT:PRIHT
755 OPEN"1",#T,P$(B)+DMS;CLOSE:O
PEN"0",#1,P$(B)+DMS;T:POKE65344,
0;FILE0#1,TAS AS:FORX=TT0LOF11):
GET#1;IFASC(A$)=13THENATTR3,5;PR
INT:ATTR3,5;GOTO770
760 IFASC(A$)<32THENATTR0,T;PRIN
T""";:ATTR3,5;GOTO770
765 IFASC(A$)<128THENATTR3,5;PR
INTA$; ELSEATTR3,2;PRINTA$;:ATTR3
,5
770 X$=INKEYS:IFX$=CHR$(32)THEHP
OKELO,0;EXEC44539;POKEHI,0;POKEI
35,0
775 IFX$=CHR$(113)THENPRINT:CLOSE
#:GOTO785
780 NEXT:POKE65344,0;ATTR3,5;PRI
NT:PRINT:CLOSE#1;LOCATE14,23;ATT

```

Feature Program

Skip a Line with BASIC09

I recently became interested in OS-9 (Level II) and have been playing with the various ways OS-9 allows you to work. Since my Disk BASIC word processor won't work with OS-9, I had to find another way to write notes and letters (I don't yet have an OS-9 word processor). I use OS-9's built command on an 80-by-24 text screen for this purpose.

The built command included with OS-9 allows you to create text files on disk. To use this tool, enter built followed by a filename. OS-9 responds by printing a question mark at the beginning of the next line. This tells you built is ready for you to enter text; just type what you want and press ENTER at the end of the line — another question mark appears allowing you to enter another line. At the end of the first line and periodically thereafter, OS-9 saves on disk (in the current data directory) the text you have entered. While the disk is spinning, OS-9 cannot receive characters from the keyboard — keep this in mind while entering your text. When you have entered the last line of text, press ENTER by itself on a new line and OS-9 closes the file, returning you to the OS9 prompt.

It is important to note that built does not support any form of editing. If you notice a mistake on a line you've already

entered, you have to start the whole file over or use an editor to fix the mistake. You can use OS-9's edit command for this purpose.

After you have finished building a text file, you can display it onscreen by entering Tlist followed by the filename. If the text is longer than the screen and happens to scroll off the top, enter tmode pause to turn on OS-9's page-pause feature. To get a hardcopy of the text, make sure your printer is online and enter

```
tlist filename >/p
```

The > symbol tells OS-9 to redirect the output of the Tlist command to Device /p, the printer.

When I print program listings with my CoCo, I like the printout to be double-spaced. Rather than fool with the linefeed settings on my printer (and frown within OS-9, using tmode), I wrote a BASIC09 program to handle the spacing for me. To use Skip, first enter the listing as shown using built or BASIC09's editor. Then, while in BASIC09, load the program and run it. You'll be prompted for the name of the program listing you want to print. That's all there is to it.

I also like my BASIC09 program listings

to be formatted (indented and with offsets). To do this, I load the program in question into BASIC09 and enter Tlist >newfilename, replacing newfilename with the new name under which I want the "listing" file saved. (Plain BASIC09 source-code files are unformatted — you may want to keep both copies of the listing.) Then I run Skip to print the listing.

Skip is useful for more than just printing program listings. In fact, the program can be used to double-space any standard text file. Just enter the name of the file when Skip prompts you for the program name.

The program listing for Skip is short and pretty easy to follow. Feel free to modify the program to suit your individual needs.

John Musumeci is a retired TV repairman whose sole hobby for the past eight years has been working with and programming the Color Computer. He may be contacted at 103-57 104 Street, Ozone Park, NY 11417, (718) 738-0212. Please include an SASE when requesting a reply.

```

00C1 FOR x=1 TO 5 \ SHELL "display 0a >/p" \NEXT x
00F0 aa=5
00F8 SHELL "display 0c"
0106 PRINT "P R I N T I N G . . . . ."
0123 OPEN #disk,program:READ
012F WHILE EOF(#disk)<>TRUE DO
0138 READ #disk,program
0145 T=LEN(program)
014F group1=LEFT$(program,80)
015A PRINT #printer,group1; \aa=aa+1
0171 IF aa=60 THEN GOSUB 30
0181 ENDF
0183 SHELL "display 0d >/p"
0195 SHELL "display 0a >/p" \aa=aa+1
01B3 IF aa=60 THEN GOSUB 30
01C3 ENDF
01D5 group2=RIGHT$(program,T-80)
01D6 IF I>80 THEN
01E3 GOTO 20
01E7 ENDF
01E9 10 REM
01EF ENDF
01F3 CLOSE #disk
01F9 SHELL "display 0c"
0207 END
0209 20 PRINT #printer,group2; \aa=aa+1
0223 IF aa=60 THEN GOSUB 30
0233 ENDF
0235 SHELL "display 0d >/p"
0247 SHELL "display 0a >/p" \aa=aa+T
0265 IF aa=60 THEN GOSUB 30
0275 ENDF
0277 GOTO 10
0278 30 FOR x=1 TO 12
0290 SHELL "display 0a >/p" \aa=5
02AA NEXT x \ RETURN

```



The Listing: skip.b09

```

PROCEDURE skip
0000 (* Written by John Musumeci
0010 DIM disk,printer:BYTE
0026 DIM program:STRING[160]
0032 DIM group1,group2:STRING[80]
0042 SHELL "display 0c"
0050 PRINT "Adjust Printer Paper."
0069 OPEN #printer,"p":WRITE
0076 FOR x=1 TO 4 \ SHELL "display 0a" \NEXT x
00A1 INPUT "What is name of program: ",program

```


Feature Program

Crunch Numbers for Fun, Not Profit

Number Cruncher is a simple yet addictive game. Points are scored by steering a "cruncher" over scrolling numbers, which are worth their face value. For example, if the cruncher passes over a 5, five points are scored. Obviously the goal is to get as many points as possible during a fixed amount of time. If you beat the previous high score, you are treated to a special high-score screen.

Number Cruncher works on any CoCo with at least 16K and Extended BASIC. After entering the listing, run the program and the title screen appears. To start the game, press the space bar — watch out, though, because the numbers start scrolling down the screen pretty quickly. Use the left and right arrows to control the cruncher, which appears at the bottom of the screen. (Hold the either key down for continuous movement in that direction.)

You can tell when points are scored by the sound and the number being written on the right side of the screen. A score of 100 is good, and 120 is excellent. Luck plays a big part in scoring well, although some strategy is useful (should you go for the high numbers, or just chase as many numbers as possible?).

The program is fairly self-explanatory, but I want to point out a few items. Line 70

creates the moving border on the title screen by printing different segments of T1\$. Lines 140 and 150 print the cruncher and scrolling numbers, respectively.

The arrow keys are checked in two ways: lines 180-190 determine if either key is being held down, and lines 210-220 check for brief presses of the keys. Lines 270-320 provide the high-score display: a flashing line is displayed, then is replaced with a string previously read from DATA lines (460 through 590).

Number Cruncher is great for those who like to modify programs. Try including the high-speed poke and you'll nearly change the whole game because of the speed difference. The game time can be increased by changing the value of 100 in Line 100 to a higher value. A cosmetic change to the title screen can be achieved by replacing Line 430 with

```
T1$="123456":T1$-T1$+T1$+T1$+T1$
```

More complex changes include allowing optional joystick control for the cruncher. Making the number zero worth ten points would raise scores somewhat. Or how about having a mystery score (perhaps represented by a question mark) that is worth a random number of points? CoCo 3

that plays like checkers but uses a 3-by-3-by-3 grid (time is the fourth dimension). Offers beginner, intermediate and expert levels, and supports the Speech/Sound Cartridge and RGB or composite monitors. *N*Johnson Software, 5830A Reinke Drive, Crestview, FL 32536, (904) 682-2907; introductory price is \$14.95.*

The CoCo Collection, a compendium of 15 games and utilities in BASIC, included are *Blind Poker, Miami Bughin, Calendar Maker, Conquest Four, DOS Commands, Hougman Junior, Indian Poker, Pair Two, A Day in the Races, Reach for the Money, Slot Machine (One and Two), Tic-Tac-Toe, Lock and Semp*. Requires a CoCo 3 and a disk drive. *Sheldon Parsani, P.O. Box 117, Notre Dame Bay, NF A0J 1A0, Canada; \$9.95 Cdn. plus \$2 S/H.*

CoCo Casse#116, a variety of programs presented monthly for the CoCo 1, 2 and 3. This issue contains *Chopper*, an arcade rescue game; *Rieher or Poorer*, a graphic board game; *Menu Maker*, for creating menus for your programs; *The Castle*, an arcade-style game; *Help!*, a dodge-the-car game; *Baseball Card Database*; *Snow Mobile*, a winter sports jumping game; *Astroid Smash*; *Duffinitium*, a word game for two players; and *DreamQuest 3*, a disk-only CoCo 3 adventure. *T & D Software, 2490 Miles Sundish Drive, Holland, MI 49424, (616) 399-9468; \$8.*

The Rainbow Seal of Certification is open to all manufacturers of products applicable to the Timely Color Computer, regardless of whether or not their companies advertise in THE RAINBOW. By awarding the Seal, we certify the product exists — we have a sample copy and have examined it. However, this does not constitute any guarantee of satisfaction. As soon as possible, these products will be forwarded to reviewers for evaluation.

users could play the game on a screen of greater width, although this would require many changes in the program.

There is much to build on with Number Cruncher. As long as the goal remains to make it to the high score display, I say "Go for it!"

Joseph Penzell has a degree in electrical engineering from the University of Maryland. In addition to programming the CoCo Computer, Joseph enjoys using the Macintosh. His hobbies include riding skateboards and playing Super Nintendo.

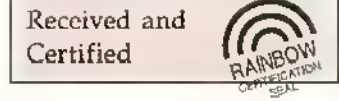
CoCo 3

The Listing: WCRUNCH

```

1 'NUMBER CRUNCHER
2 'BY JOSEPH PENDELL
3 'COPYRIGHT (C) 1992
4 'BY FALSOFT, INC.
5 'RAINBOW MAGAZINE
30 CLEAR 1000:GOSUB 370
40 CLS:PRINT @ 72,"number"+T$+"c
runcher":IF FIRST=2 THEN PRINT @
235,"SCORE":SC:PRINT @ 299,"HIG
H ":HS
50 IF FIRST=1 THEN PRINT @ 486."
PRESS SPACE TO START":FIRST=2 E
LSE PRINT @ 484."PRESS SPACE TO
PLAY AGAIN":
60 'MOVE BORDER AROUND TITLE
70 FOR I=1 TO 5:PRINT @ 39,MID$(
T1$,I,T7):PRINT @ 7T,MID$(T1$,I
+4,T):PRINT @ 103,MID$(T1$,6+1,
17):PRINT @ 87,MID$(T1$,11+1,1):
:FOR J=1 TO 2:IF INKEY$<" " THEN
N NEXT J,1:GOTO 70
80 CLS:GOSUB 350
90 'START THE GAME
100 FOR RACE=1 TO 100
110 'CHECK FOR SCORE
120 S=PEEK(1057+X):IF S<97 THEN
PRINT @ ST1," ":PRINT @ 506,T$:
ELSE S=S-1:SC=SC+S:PRINT @ 50
7,L$(S):PRINT @ 506,T$:SOUND S
*20+1,1
130 'UPDATE SCREEN
140 PRINT @ X,X$:
150 PRINT @ RND(24)+480,CHR$(RND
(10)+47):
160 'CHECK IF ARROW KEYS PRESSED
170 AS=INKEY$:IF AS<" " THEN 210
180 IF PEEK(343)=247 THEN IF X>0
THEN X=X-1
190 IF PEEK(344)=247 THEN IF X<2
3 THEN X=X+1
200 GOTO 230
210 IF AS=CHR$(8) THEN IF X>0 TH
EN X=X-1
220 IF AS=CHR$(9) THEN IF X<23 T
HEN X=X+1
230 NEXT RACE
240 'IF HIGH SCORE THEN SHOW A S
PECIAL DISPLAY
250 FOR I=1 TO 250:NEXT I:IF HS>
>SC THEN 40
260 HS=SC:PRINT @ 511," ":
270 FOR I=448 TO 0 STEP -32:FOR
J=255 TO 143 STEP -16:PRINT @ I,
STRING$(32,J):NEXT J,1
280 FOR I=32 TO T20 STEP 32:FOR
J=255 TO 143 STEP -16:PRINT @ I,
STRING$(32,J):NEXT J:PRINT @ I,
TAB(10) NPS(1/32):NEXT I
290 FOR J=255 TO 143 STEP -16:PR
INT @ 160,STRING$(32,J):NEXT J
300 FOR I=192 TO 208 STEP 32:FOR
J=255 TO 143 STEP -16:PRINT @ I,
STRING$(32,J):NEXT J:PRINT @ I,
TAB(8) SP$(1-160/32):NEXT I
330 FOR I=1 TO 1000:NEXT I:GOTO
40
340 'INITIALIZE FOR EACH GAME
350 X=12:SC=0:RETURN
360 'INITIALIZE ONCC
370 FIRST=T:HS=0:X$=CHR$(130)+CH
R$(143)+CHR$(133):T$=CHR$(128)
380 L$(0)="ZERO ":L$(1)="ONE ":
L$(2)="TWO ":L$(3)="THREE":L$(4)
)="FOUR ":L$(5)="FIVE "
390 L$(6)="SIX ":L$(7)="SEVEN":
L$(8)="EIGHT":L$(9)="NINE "
400 FOR U=1 TO 4:FOR Z=1 TO 13:R
EAD Z:NP$(U)=NPS(U)+CHR$(Z):NE
XT Z,U
410 FOR U=1 TO 4:FOR Z=1 TO 13:R
EAD Z:HP$(U)=HP$(U)+CHR$(Z):NE
XT Z,U
420 FOR U=1 TO 4:FOR Z=1 TO 10:R
EAD Z:SP$(U)=SP$(U)+CHR$(Z):NE
XT Z,U
430 FOR I=159 TO 239 STEP 16:T1$
=T1$+CHR$(I):NEXT I:T1$-T1$+T1$
+T1$+T1$
440 RETURN
450 'DATA FOR "NEW"
460 DATA 132,143,143,133,130,131
,131,143,133,143,143,133,143
470 DATA 133,134,143,133,130,140
,141,143,133,142,143,133,143
480 DATA 133,143,134,133,130,143
,143,143,132,135,134,133,143
490 DATA 135,143,143,135,139,131
,131,143,135,143,143,135,143
500 'DATA FOR "HIGH"
510 DATA T33,143,133,T39,T29,143
,137,131,134,143,133,143,133
520 DATA 132,140,133,143,133,143
,133,143,143,143,132,140,133
530 DATA 133,143,133,143,133,143
,134,143,130,143,133,143,133
540 DATA 135,143,135,139,131,143
,143,131,131,143,135,143,135
550 'DATA FOR "SCORE"
560 DATA 137,131,134,143,137,131
,134,143,142,131,141,143,129,131
,141,130,131,131
570 DATA 134,140,141,143,133,143
,143,143,133,143,130,143,132,140
,135,130,140,141
580 DATA 141,143,138,143,133,143
,142,143,134,143,137,143,133,134
,143,138,143,143
590 DATA 139,131,135,143,139,131
,135,143,143,131,143,143,135,143
,135,139,131,131

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Received and Certified

The following products have recently been received by THE RAINBOW, examined by our staff and issued the Rainbow Seal of Certification, your assurance that we have seen the product and have ascertained that it is what it purports to be.

Sink the Armada, a GUI-driven game that plays much like Battleship except that your opponent is the CoCo. Supports both Hi- and Lo-Res mouse/joystick interfaces. Requires a CoCo 3 with at least 256K, an RGB monitor, a mouse or joystick, OS-9 Level II, and the WindTnt modic and control program from Multi-Vue, My Systems, P.O. Box 818, Arvada, CO 80001-0818, (303) 420-7777; \$17.95.

KWIKGEN v1.01, an OS-9 utility for creating and modifying the OS-9 boot file. Designed to be fast and easy to use, KWIKGEN can load an entire existing boot file into memory for modification. When finished, the user simply writes the new boot file back to floppy disk. Requires OS-9, Gale Force Enterprises, P.O. Box 66016, Sausalito, CA 94965, (415) 338-5344, Canada; \$19.95 U.S., plus \$4 S/H

Instructional and Bible Programs, a collection of seven bible and five educational programs/games written in BASIC. Included are *Bible Scriptures, Bible Questions (I, II and III), A Bible Adventure, A Journey to the Promised Land, Vocabulary, Math, Homonyms, Spelling and Guess the Number*. Requires 64K and Extended BASIC. *Sebastian LaSpada, 531 Main Street, Dunkirk, NY 14048, (716) 366-5261; \$10.*

4-D Checkers, a two-player CoCo 3 game

The 11th Year of THE RAINBOW

Compiled by Julie Hutchinson

Eleven years? That's right, and this is our ninth yearly index of articles and reviews. The items listed here appear in issues of THE RAINBOW from July 1991 to June 1992. (Previous indices appear in past July issues, starting with July 1984.) To complete your RAINBOW library, you'll find more information about how to get back issues with your favorite programs and articles on Page 18 of this issue.

BUSINESS

Krueger, Roger F. "CoCo Writes Purchase Orders"; CoCo3, June 1992, p. 1. Use the CoCo 3 for mail-order and other needs. CCDDPO

COMMUNICATIONS

Ford, Steven. "CoCo Conversations"; July 1991, p. 22. Getting your ham radio license.
Hrahn, Warren G. "RBBS List"; November 1991, p. 14. A look-to-you-RBBS idea for CoCo communications.
Kessler, Gary. "Serial Asynchronous Communications"; June 1992, p. 27. A look at the nifty, gritty behind-modems.
Kuns, Eddie. "Output Bureau"; July 1991, p. 65. A mixed bag of links.
Kuns, Eddie. "Delphi Bureau"; August 1991, p. 46. Literally speaking.
Kuns, Eddie. "Delphi Bureau"; September 1991, p. 28. More dot commands.
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Falk, Lonnie. "Print# 2"; July 1991, p. 08.
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Cheves, Warren. "Let CoGo Do the Grading"; CoCo1/CoCo2/CoCo3; September 1991, p. 18. A multiple-choice test grader with strange attached MCTEST.
Eloff, Jr. Phil. "Name That Country"; CoCo3; September 1991, p. 05B. A graphics-based quiz on nations. COUNTRY.

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Duck, Jon. "Pirate's Treasure"; CoCo1/CoCo2/CoCo3; December 1991, p. 46. A text adventure for use with the CoCo 1, 2 and 3. DEMON.
Gallis, Kevin. "The Wizard Plus a Jinx on Checkers"; CoCo1/CoCo2/CoCo3; March 1992, p. 1. A twist on checkers as we know it. WIZARD.
Golas, Ruth. "Activities for a Rainy Day"; CoCo3; April 1982, p. 4. Enriching Wenzley Spider in graphic and musical form. EVR SPIDER.
Hogberg, Joel M. "Racing Season Opens"; CoCo3; May 1992, p. 28. Auto race through all four seasons. SRACER.
Kimball, Bob. "Patrol Command"; CoCo1/CoCo2/CoCo3; April 1992, p. 20. Desert warfare for the CoCo. PATRIOT.
McDowell, Jim. "Two Players for the Price of One"; CoCo1/CoCo2/CoCo3; June 1992, p. 11. A two-player arcade game for all CoCos. STARGRAB.
Ouellette, George. "Pyramid 2"; CoCo1/CoCo2/CoCo3; October 1991, p. 29. An odd-on favorite with Solitaire. PYRAMID.
Rinke, Brad. "Word Search"; CoCo3; March 1992, p. 6. A word finder for word-search players. WORDFIND.
Says, John A. "Quick Reflexes Are a Must"; CoCo3; April 1992, p. 25. A game of luck (and skill). TESTLUCK.
Says, John A. "Get a Bang Out of Word Games"; CoCo3; June 1992, p. 22. Beat the bomb by unscrambling the words. BEATBOMB.
Schallert, David. "Superdual"; CoCo1/CoCo2/CoCo3; July 1991, p. 41. A modern roll for seasoned game. SNIPROICE.
Speight, Kevin. "Logic Puzzler"; CoCo1/CoCo2/CoCo3; February 1992, p. 02. An endless supply of logic puzzles. LOGIC.
Wessnburger, M. "Mogglark"; CoCo3; August 1991, p. 34. A battle of wit against alien forces. MEGATANK.

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Palmer, Bill. "HP DeskJet and the CoCos, The"; May 1992, p. 1. How the DeskJet with the CoCo for better results.
Rainbow Staff. "The Computer Will"; April 1992, p. 1. A look at making a will for your computer system.

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Mitchel, Barry. "Turn the World On End"; CoCo3; June 1992, p. 12. A graphics and sound demo for the CoCo 3. INDRBIT.
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Chores, Dan. "Interrupt-Driven Serial Communications"; CoCo3; February 1992, p. 28. Reliable host operation through the CoCo 3 serial port. DANTERM.
Dastefino, Tony. "Turn of the Screw"; July 1991, p. 48. A slice of time.
Dastefino, Tony. "Turn of the Screw"; September 1991, p. 42. It's about time. SETM.
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Goodman, Marty. "Modification Allows Y Cables"; March 1992, p. 7. A fix for disk controllers for use on Y cables.
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Goodman, Marty. "Upgrade Your Multi Pak"; October 1991, p. 062. Using the MPI with the CoCo 3.
Steidl, Jeff. "Pause Switch Adds Freedom to CoCo Habits"; June 1992, p. 10. A pause switch that works with all CoCos and CoCos.

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Speight, Kevin. "Matchmaker, Matchmaker"; CoCo1/CoCo2/CoCo3; June 1992, p. 16. Pairing "couples" for most any purpose. MATCHMAK.
Spencer, Brad. "CoCo 3 Stores Recipes, The"; CoCo3; March 1992, p. 14. A repeat recipe file for the CoCo 3. RECIP2.

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Miller, William K. "Music Tutor"; CoCo3; October 1991, p. 59. Learn to read music with a quiz. NOTETHR.
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star Plug 'n' Go for Your CoCo!



star NX-1020

This CoCo compatible NX-1020 system sets new standards in color printer performance... 225 cps, 4 NLQ fonts including Script, plus a high speed draft font; but the enhancements don't stop there. Add a 18k buffer, a special quiet mode, top lead, bottom and tear tractor, and the list goes on. Seven on-demand colors, 8 color graphic modes, Epson and IBM emulation for maximum software compatibility. Virtually everything desired in a printer is here — speed, color and versatility at an affordable price with a 2 year warranty.

Our Plug 'n Go for the Coco system includes:

- NX-1020 Multi Font Color Printer
- Blue Streak Ultima
- Software Support Disk
- Color Graphics Utilities

\$239⁹⁵

* \$10 Shipping & Insurance



star NX-1001

This CoCo compatible NX-1001 system is fully featured with 4 NLQ plus a draft font, 10 character sizes from subscript to quadruple size, 4k buffer, 180 cps, tractor and tractor lead, and much much more. Backed by a 2 Year warranty. Epson and IBM emulation modes for maximum software compatibility. A performer so versatile you may never exhaust it's creative possibilities!

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PHOTON

The critics will be raving about this strategy game! Based on an original concept by author Jeff Stedel, Photon is an addictive time-muncher in the spirit of Lemmings™ and Tetris™. Match wits with Ludivite, the evil power droid, as you race you way through over 600 devious levels. The numerous original music scores, digitized speech and sound effects, and pleasing cinematic CGD graphics enrich Photon to make it the unparalleled gaming experience. Soon to be released on a variety of computer platforms, the CoCo Community is lucky enough to be given first glance at this fantastic game! Req. 128k CoCo-3, disk drive, and joystick.

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